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*Illustrated.

The decision of Judge Maxey, holding that a conductor receiving train orders by telephone is not subject to the 13-hour work-day

Conductors Who Telephone Train Orders

limit prescribed for telephone operators, which was reported May 14, page 1028, will, of course, be appealed to the Supreme Court; and it will afford that body an interesting opportunity to discuss some fine points of strict construction and "human interest." The 13-hour limit applies to "other employees," which term can easily be construed to include conductors. Judges Maxey and Pardee hold that the term only means other employees having primarily the same duties as station operators. It looks as though

they would allow a station agent, for example, on duty 14 hours a day, to occasionally or incidentally transmit a train order; but they emphasize the phrase of the law "in towers and offices," etc. What is the rational basis of the 13-hour limit? Partly, perhaps wholly, the need of providing against the ill-effects on the person's bodily or mental health of long confinement in one room. It may reasonably be said that an operator working outdoors, or one so situated that he could take active exercise in fresh air every few hours, could safely be allowed to work longer than one confined continuously to a desk in an office. As every one knows, a freight conductor can often sleep in his caboose. This is one reason why, for him, 16 hours is not an utterly intolerable work day. However, this hairsplitting may as well be left to the august judges of the higher court—or to the brotherhood leaders who will go before the Congressional committees to get the law amended with a view to softening the conductor's hard lot!

H. U. Mudge, receiver of the Chicago, Rock Island & Pacific, recently gave an interview to the press in which he discussed

The Rock Island and Federal Regulation

the reasons for the road's failure financially. Part of what he said was published by the newspapers. The rest was ignored. The result was one of those too numerous cases where a man who is frank with the press and public, was, by a partial quotation, represented as saying practically the opposite of what he did say. Mr. Mudge was credited with giving federal regulation a large share of the blame for the Rock Island's present difficulties. As a matter of fact, few railroad presidents in the country have taken as hopeful a view of the value of federal regulation as has Mr. Mudge. In his remarks after the appointment of receivers for the Rock Island he referred to the 12-year summary given in his last annual report and mentioned government regulation among other contributory causes that had acted to prevent the Rock Island from fulfilling the hopes of its owners in 1912. The Rock Island operates in 14 different states which makes it subject simultaneously to 15 varieties of regulation. Of these 15 varieties Mr. Mudge has often expressed the belief that one—federal regulation—worked in the long run for good rather than evil, and that the other 14 could far better be dispensed with. State reduction of passenger rates and freight rates undoubtedly was a factor in the Rock Island's decrease in earning power in the years 1902-15. Federal regulation pretty surely also nibbled at rates, but to offset this there was positive good aimed at, even if not always achieved. It seems unfair that a misleading emphasis should have been placed on Mr. Mudge's reference to regulation, when he has accepted federal regulation not only without active opposition but actually in a spirit of cheerfulness and co-operation.

Contrary to the practice which has prevailed for some years, a number of state legislatures have met and adjourned without

Utah Invites Both Labor and Capital

passing any legislation for the regulation of railways and other public utilities. The legislature of Utah did this, and in addition, took a step which is unique. It adopted a set of resolutions for the express purpose of inviting both labor and capital to seek occupation and investment within the state's boundaries and to assure them that they would receive fair treatment if they did so. The resolutions set forth that in all its history, the people of the state have uniformly protected the interests of all classes. The natural resources of the state have been only prospected on the surface and present a most inviting field for investment, profit and return. Therefore, it is resolved, "that the state of Utah by and through its lawmaking body, does hereby invite to its midst the humble and honest laborer from whatsoever clime, who would better his condition, the homeseeker who would set up his household gods in a new country to his better

advantage, the investor of capital who would seek sound and profitable investment; all under the certain assurance that their rights, liberties and properties will be jealously safeguarded and held in sacred trust by the government of the state." These resolutions are significant, not only as indicating the policy of Utah, but also as implying that it is in contrast with the policies being followed by some other states. It certainly is a remarkable commentary on the recent course of legislation that any state should feel called upon formally to announce, and should expect to gain by announcing, that both labor and capital can enter its borders with the "assurance that their rights, liberties and properties will be jealously safeguarded." This was formerly regarded as the chief function of all governments. We commend Utah's resolutions to those numerous states, such as Iowa, Indiana, Oklahoma and Texas, which think that the chief function of government is to pursue and harass capital invested in railways and other public utilities as if it were an enemy of the public welfare.

RAILWAY FUEL ASSOCIATION CONVENTION

THE seventh annual convention of the International Railway Fuel Association was one of the best attended in the history of the association. The Baltimore & Ohio (one of the roads that has eliminated convention expenses this year because of decreased revenue) was represented by 19 men. This certainly is a great tribute to the work of the association and clearly indicates the loyalty of its members and the faith they have in its work.

By far the most important subject presented for discussion was that of Pulverized Fuel. The adaptability of this fuel to locomotive use has been talked of, and more or less experimented with for several years, but during the past year it has received much attention, the experiments made on the New York Central locomotive being especially noteworthy. These were referred to in Mr. Robinson's paper and were also dealt with in an article published in the *Railway Age Gazette*, April 30, 1915, page 941. The Fuel Association has the distinction of being the first association to recognize officially the possibilities of this fuel on locomotives.

This association also went on record as to the permanency of the locomotive stoker. The committee report on this subject is perhaps the best symposium on the value and use of the mechanical stoker yet published. It covers briefly the reasons for the existence of the stoker, its operation and the operating advantages obtained by its use. Both these subjects were actively discussed and a large amount of interesting information was presented. While the more enthusiastic members looked upon the use of pulverized fuel as a panacea for all the locomotive fuel problems, such as smoke, fuel economy, locomotive terminal detention, and, in fact, most of the difficulties now experienced in locomotive operation from a fuel standpoint, it was conceded that there are difficulties yet to be overcome. The advocates of the stoker did not seem to view with very much apprehension the possibility of pulverized fuel cutting into their field.

The committee reports on fuel stations and coal storage also contained much valuable information. It is evident that economies, which are broad in their extent, are made possible by the logical storage of coal. By storing coal, less equipment is required, more equipment is available for revenue tonnage in the busy season, the coal can be purchased at a lower price, the railways are better protected from a shortage of fuel, the mines can be operated to much better advantage from both the operator's and miner's point of view—in fact, the storage of coal by the railways would be of direct economic advantage to the country at large. Several roads have made a careful study and have become convinced of the practicability of thus handling their fuel supply.

Another subject concerning which there is little concrete in-

formation, but which presents a lucrative field for improvement, is that of the railway stationary boiler plant. That this subject has received but little or no consideration was evident from the statements of various speakers. It is, however, a subject that requires careful study. A dollar saved from that source is as valuable as a dollar saved from any other. With but little additional work the fuel and mechanical experts on each road should be able to properly supervise these plants, and they would undoubtedly find their time well spent.

Fuel now represents about 25 per cent of the transportation expenses of a railroad. It is, therefore, worthy of the attention of the highest railway officers. Frequently the desired results are not fully realized on account of the lack of proper authoritative support. The opportunities for the economical use of fuel are not restricted to the direct users of the fuel. Much can be done by the transportation men, but without the proper backing, the men held responsible for this item will be severely handicapped.

UNINTELLIGENT AND UNFAIR CRITICISM

IN a statement appearing in the newspapers on May 19, N. L. Amster, chairman of one of the Rock Island protective committees, criticised severely the recent action of the receivers of that road in placing an order for 67 track miles, or approximately 10,000 tons, of new 100-lb. rails to replace the same mileage of "85-lb. rails, most of which have been in place only since 1907-9." Mr. Amster added that "the Great Northern, not in the receivers' hands, which hauls an average train load twice the weight of the Rock Island, has few if any 100-lb. rails on its lines." These statements of Mr. Amster show a lack of knowledge of railway operating conditions, and, coming from the source they do, they may do harm to the railways in general. Such statements as these, coming from persons supposedly familiar with railway operation, complicate the already serious problems confronting the Rock Island and other roads.

The Chicago, Rock Island & Pacific operates over 7,800 miles of line in addition to 475 miles of multiple main tracks. Assuming that 67 track miles of new rails were ordered annually, it would be necessary for the rails to give an average service in main tracks of 124 years before being transferred to the 2,200 miles of side and yard tracks. It is thus evident that even the 67 track miles of rails, the purchase of which is characterized as extravagant, is entirely inadequate for the proper maintenance of the property. This view is supported by a comparison with the rail orders placed this year by several other roads, the Burlington having ordered 36,000 tons, the Santa Fe 66,000 tons and the Illinois Central 35,000 tons, while the Pennsylvania is now inquiring for 138,000 tons.

Regarding the criticism of the 100-lb. rail to replace "85-lb. rail which has been in place only since 1907-9," this latter rail has had from 6 to 8 years' service in the main line. Every railway man knows that as new rail is bought it is advisable to place it in the most important main lines, and the rail released here is not scrapped, as Mr. Amster's criticism would indicate, but is laid again in secondary main and important branch lines where it continues to give further service. It may even again be relaid on less important branch lines or in side or yard tracks, when its condition has become such as to unfit it for further use under heavy traffic. As to the weight of the rail, the use of 100-lb. rail is in accordance with general practice for main lines. The American Railway Engineering Association at its last convention adopted standard sections for rails up to 140-lb., while the Pennsylvania Railroad has been working for two years on a new 125-lb. standard section.

The introduction of a comparison of the train load of the Great Northern with that of the Rock Island is equally out of place and misleading. The primary factors governing the train load are the ruling grades and the size of locomotives, while the weight of rail play a very insignificant part. The relatively

low train load on the Rock Island in comparison with that of the Great Northern is due primarily to the large expenditures made on the latter road to secure low grades, while the Rock Island has been unable to secure the funds to make such expenditures.

THE STATUS OF TRAIN LIMIT LEGISLATION

THE railway labor brotherhoods have succeeded in getting bills to limit the length of freight trains introduced in a large number of legislatures. But they are not having remarkable success in getting them passed. The only state in which such a law has been enacted is Arizona. Such bills were introduced this year in the legislatures of the following states, which have adjourned without passing them:

California	New Jersey
Colorado	New York
Indiana	North Carolina
Iowa	North Dakota
Kansas	South Carolina
Minnesota	South Dakota
Nevada	Utah

Such bills are pending in the legislatures of the following states, which are still in session:

Illinois	Pennsylvania
Michigan	Wisconsin
Ohio	

In other words, the legislation has been defeated in 14 states and is still pending in 5.

The arguments used against these measures in the states where they have been defeated are the same as those being used where they are pending. It has been pointed out that their passage would increase rather than reduce accidents; would cause an entirely unnecessary and very large increase in railway fixed charges and expenses which would have to be borne by the traveling and shipping public, and would tend to cause serious traffic congestions and delays. The fact that only one state has passed a train limit law, and that the lawmakers of 14 states have considered the merits of the proposed legislation and rejected it, ought to carry great weight with the legislatures which are still in session.

There is not a single valid argument in favor of train limit legislation, and there are innumerable overwhelming arguments against it. Nevertheless, it is being vigorously supported not only by the railway labor brotherhoods, but in some states by other labor organizations. In Illinois the railway labor brotherhoods and the state federation of labor are closely and vigorously co-operating in support of it. The Public Utilities Committee of the Illinois house reported unfavorably on it, but the political influence of organized labor was so great as to get it taken up for consideration by the House.

Many lawmakers seem entirely unable to hear the voices of reason and expediency when the paid lobbyists of organized labor are about. It is hardly conceivable, however, that the legislature of any one of the five important states in which train limit legislation is now pending can be induced to pass it.

NEW BOOKS

Engineering Office Systems and Methods. By John P. Davies. Size 6 in. by 9 in., 544 pages, 243 illustrations, bound in cloth. Published by the McGraw-Hill Book Company, Inc., New York City. Price \$5.

This book covers a wide range of subjects of more or less direct interest to all office and consulting engineers, a large part of the information being compiled from other sources and put in convenient form for use. The 13 chapter headings include the following: Collection of Preliminary Data for Engineering Projects; Designing and Drafting Systems; Specifications for Engineering Material; Purchasing-Office Methods and Forms; Cost Keeping and Estimating; Sampling, Inspecting and Testing Engineering Material; Domestic and Export Shipping; Progress Charts, Scheduling Systems, etc., and Indexing and Filing Systems for the Engineering Office. The book contains

a large number of forms, specifications, rules, reminders, etc., which, if not in themselves applicable, would frequently suggest similar solutions for engineering office problems.

Railway Rate Regulation. By Joseph Henry Beale, professor of law at Harvard University, and Bruce Wyman, of the Massachusetts bar, recently professor of law at Harvard University. Second edition, rewritten by Bruce Wyman. 1,306 pages, 6 in. by 9 in. Bound in law buckram. Published by Baker, Voorhis & Co., 45-47 John street, New York City. Price, \$7.50.

This second edition of Beale & Wyman's well known and authoritative work covers the entire law affecting railroad rate regulation, with special reference to the powers of the Interstate Commerce Commission, and on account of the remarkable growth in the law covering the subject treated since the first edition was written in 1906, contains a very large amount of entirely new matter. In this treatise Professor Wyman has cited every opinion of the Interstate Commerce Commission discussing the principles of rate regulation. The work contains also a discussion of every opinion of the federal courts, wherein the powers of the commission under the act to regulate commerce are involved, and many rulings of state commissions on points not fully covered by the Interstate Commerce Commission.

Although the first edition covered nearly 20 years of activity of the Interstate Commerce Commission the commission at that time had just been given power to fix rates for the future; the power to suspend advances in rates was not granted until 1910; likewise its power to order joint rates, granted in 1906, was not perfected until 1910. All of the treatment of the functions of the commission in establishing rates, and the jurisdiction of the commission over joint rates, therefore, which extends over several chapters in the second edition, is new matter written upon the basis of important decisions decided since the first edition. The author remarks that "in writing the first edition we had only the rulings of the original commission to guide us, and the few decisions of the courts, mostly to the effect that the act did not justify what was ordered. In this edition we have the many volumes of the commission making orders as to future conduct, which are supported in most instances by the decisions of the courts." The second edition, therefore, covering the past eight years of the activities of the commission, has several hundred per cent more opinions as the basis for its text than were available for the first 20 years of the commission's existence. The historical development of the general principles of rate regulation receive much attention throughout the work.

The treatise is divided into four books, devoted to "Jurisdiction of the Commission," "Limitation of Charges," "Prevention of Discrimination" and "Powers of the Commission." Fifty pages are devoted to a table of cases cited and 55 to a very comprehensive index. In the appendices are given the complete text of the various statutes, together with the rules of practice and forms of pleading before the commission and the courts.

A most valuable part of the book is made up of long chapters on procedure in which practically every case involving a point of practice of importance has been treated.

The author calls attention in the preface to the way in which the contrast is brought out between opposing theories of rate regulation where the conflict in the law is as yet not determined. The policies of basing schedules as a whole upon the original cost of the plant or upon its present value are elaborately discussed, together with an indication of the collateral effects of a decision one way or the other. Likewise in dealing with particular rates, whether the cost of the service or its value is to be taken as the test, receives treatment to the extent of a chapter on each. The author does not hesitate to let his own preference for cost as the basis of regulation appear, although he appreciates the modifications to

which this theory must be subjected when put into actual practice.

It would seem that this book must be indispensable to all lawyers engaged in practice before the Interstate Commerce Commission or the courts on matters involving rate regulation, and of very great value to all students of the law upon this subject. The headings throughout are made so specific that the reader can easily locate the subject which is of interest to him.

Railroads. Finance and Organization. By William Z. Ripley, Nathaniel Ropes Professor of Economics, Harvard University. Longmans, Green & Co., New York. 638 pages. Price \$3.

The first of Professor Ripley's two volumes dealing with railroads was published in 1912, and consisted of a comprehensive study of rates and regulation. The present volume treats of finance and organization. A knowledge of the problems of the financing and organization of American railroads is prerequisite to an intelligent discussion of railroad regulation. Never before, however, has there been made a comprehensive and just study of these problems. The material for such an investigation is scattered through a vast number of documents, and is often in such shape as to require literally months of work to digest it. Professor Ripley has painstakingly and scientifically sifted this great mass of material and made the results of this study available for railroad men and students of the American railroad problem. He has done an immense work and one deserving of the gratitude of any one who aspires to have any real knowledge of the all-important economic questions which are now in process of discussion by the Interstate Commerce Commission, state legislatures and the public press. Public hearings and investigations of railroad questions and of the history of particular railroads have been frequent in the past few years and the amount of testimony elicited has been voluminous. It is in large measure on this material that Professor Ripley has drawn for his facts.

Like the history of a happy country, the history of a successful, well managed railroad company affords little material for interesting and exciting reading. On the other hand, a description of the way spectacular fortunes have been made out of American railroads may be rendered interesting and often quite dramatic. For this reason it sometimes appears that Professor Ripley lays more stress on the destructive criticism of American railroad history than on the record of achievement of which this history is full. Present day problems of regulation, however, are so intimately bound up with past practices in railroad organization and financing that even where these past practices are now considered unfashionable or even unethical a discussion of them is necessary to a thorough understanding of the subject.

Professor Ripley has a New England bluntness in his comments on methods which are now illegal or considered bad practice that makes him a severe but not an unfair critic. He voices in a great number of instances the feelings in regard to certain railroad matters and railroad financing which are harbored by a great majority of straight-thinking, intelligent Americans who are not connected with railroads or with railroad securities. He denounces in an unmistakably forceful way such methods as led to the New Haven and the Rock Island failures and to the predicament in which the Erie found itself in 1907. Since this criticism voices the honest sentiment of so many outsiders, it should be read by railroad men, and especially railroad executives, with interest and with respect. It may be true that the practical railroad man can find inaccuracies in many of the descriptions of misdeeds which Professor Ripley denounces. With some of his conclusions, especially in regard to the benefit to be derived from a physical valuation of railroads, a great many railroad men will entirely disagree. But this detracts in no way from the interest of the book.

Professor Ripley is an ardent advocate of the federal regulation of railroads and sees clearly the needless burdens which state

regulation is placing on railroad operation. While recognizing the importance of the "initiative and efficiency which spring from private ownership," he feels strongly that a guarantee for the common weal of a firm, just and steady supervision is necessary. To the railroad man it probably will appear that he underestimates the difficulties of obtaining such a supervision. The genius of a Harriman, with the financial backing of Kuhn, Loeb & Company, made supervision over 30,000 miles of line something more than a name; but there are 250,000 miles of line in the United States subject to the jurisdiction of seven commissioners, none of whom has had experience in the management of railroads.

Professor Ripley's answer to all this is that the best results of regulation can be obtained by co-operation between the federal regulative body and the railroad companies. This view is the one which is being pretty generally adopted by railroad men themselves.

The scope of the book is best indicated by the list of subjects with which it deals. These are Railroad Construction Finance, Capital and Capitalization, Railroad Securities, The Course of Market Prices, Speculation, Stock Watering, State Regulation of Security Issues, The Determination of Reasonable Rates, Physical Valuation, Receivership and Reorganization, Inter-corporate Relations, Combinations, Dissolution Under the Anti-Trust Law, and Pooling and Inter-railway Agreements. Space will permit of only a very brief comment on the book's treatment of most of these subjects.

Construction finance, of course, provides the author with numerous opportunities for denunciation of bad methods. One is inclined to think that if he had ever had any experience in financing a new piece of railroad construction he would be somewhat less ready to severely condemn all promoters' methods. As Frank Trumbull, chairman of the board of the Chesapeake & Ohio, pointed out in his statement before the Hadley Securities Commission, the changing of a \$100 bill into 100 one dollar bills is a transaction of unimpeachable honesty, but not particularly profitable. Whether there is or is not going to be an actual profit in a new piece of railroad construction, somebody must be made to believe there is or no capital will be provided for the construction.

In the chapter on capital and capitalization the various definitions of these words are contrasted in such a way as to bring out a point that is very often much obscured by general discussions of "overcapitalization." Professor Ripley's own distinction is that capital is the assets and capitalization the liabilities. It should be borne in mind in any discussion of this kind that the face value of a bond bears a very different relationship to the liability of the company from that borne by the par value of shares of stock. Whatever par value may be given to the shares of stock legally they can represent nothing more than a pro rata equity in the ownership of the property. Bonds, however, are secured by a promise to pay a definite sum which constitutes the face value of the bond. The capital actually invested in a railroad company is the value of its assets. This cannot be shown on its books, but what is shown is the cost of the assets; at least that is what should be shown by the books.

Professor Ripley in discussing state regulation of security issues comes to the conclusion that mere publicity is inadequate. We cannot agree with him if the publicity is immediate and intelligible. Mere publicity has worked remarkably well in regulating security issues by joint stock companies in England. No law that has ever been invented can take the place of intelligence and business acumen in protecting a man against bad investment.

In discussing pooling agreements Professor Ripley is strongly in favor of co-operation between railroads for the elimination of wasteful competition.

The book as a piece of literature is readable. It can be strongly recommended to railroad men and to all other persons who are interested in the matters of which it treats.

Letters to the Editor

WASTE IN PRESENT METHODS OF CAR HANDLING

CHICAGO, Ill.

TO THE EDITOR OF THE RAILWAY AGE GAZETTE:

For many years car service officers have discussed in their meetings the terrific waste inherent in present methods of car handling. All sorts of remedies have been suggested by practical operating men, both for improved methods under the present ownership basis, and for various degrees of car pooling. Suggestions have been made that the executive and financial officers be informed of the tremendous saving that undoubtedly would accrue from effective co-operation in car distribution, repairs and storage. It is inconceivable that this situation is not fully understood by those responsible for railway operation. It also cannot be admitted that American railroad men are not equal to evolving the details of practicable plans for a drastic readjustment of existing conditions.

Why then, at a time when economy is the supreme desire of every railroad manager, is this problem not given adequate and comprehensive treatment?

Possibly the significance of the issues involved after all are not generally understood, and if so the *Railway Age Gazette* could perform a service of vast importance by analyzing and exposing the wasteful and extravagant features of our present methods.

L. M. BETTS,

Car Accountant, Belt Railway of Chicago.

THE GOVERNMENT ACCIDENT RECORDS

NEW YORK CITY.

TO THE EDITOR OF THE RAILWAY AGE GAZETTE:

The Interstate Commerce Commission has issued a second and revised draft of the proposed new blanks for making monthly reports of railway accidents, continuing further the suggestions which were first issued last January. There is no evidence in the pamphlet, or in the accompanying letter, that the commissions of the 45 individual states (which have commissions) have had any voice in the formulation of the proposed rules or in the discussion as to what should or should not be included in them.

As most of the principal railroads have to report both to the federal and to the state authorities, it is much to be desired that the active interest of members of state commissions shall be enlisted in this matter.

This movement for improved records seems liable to failure, or partial failure, by reason of its comparative unimportance. State commissioners will not give it their attention unless they are specially appealed to; and this special appeal ought to be made. In one way of looking at it, the whole thing is only a mass of clerical detail; but it is an important thing for the railroads, nevertheless. A road having to report to six or a dozen states writes, in a year, an innumerable number of pages, in the aggregate, to be included in these records, and the unending diversity which now prevails is entirely unnecessary, if only there could be an agreement. The present lack of agreement exists, not because anybody desires diversity, but simply because there is no one to take the initiative.

No one state will lead off, because there is the feeling that such leadership is not warranted. Committees of the National Association of Railway Commissions accomplish things but slowly.

The railroads, presumably, are using their influence with the Washington authorities, through the committee of which Mr. Kruttschnitt is chairman. Why should not they also use their influence with state commissions? Why should not prominent roads in every state communicate with their commissions and

try to get them to put their statistical officers in touch with the commission at Washington, in connection with this matter and thus start some real co-operation?

R. R. N. Y.

MORSE AND CONTINENTAL ALPHABETS

HAILEYVILLE, Okla.

TO THE EDITOR OF THE RAILWAY AGE GAZETTE:

Your editorial of May 7, advocating the use of the Continental alphabet on the railroads, in place of the Morse, is too late. So far as "safety first" is concerned there is not much of an argument. There is nothing any plainer than the Morse alphabet when handled correctly. Of course, with the class of operators now being produced the Morse is unmercifully butchered; and there would be little, if any hope for an improvement where any other alphabet is used. As for the wear and tear on the nerves there is no perceptible difference. Inasmuch as the greater percent of telegraph operators coming to the surface now are not capable of handling Morse what would they do with the Continental? The sending machine has, to some extent, in the hands of those who have practiced extensively with it, made their sending better; but in the hands of the beginner the condition is worse than when they use the primitive key.

Would it pay anyone to begin to familiarize himself with a new alphabet? It will be only a short time until the telephone will entirely supplant both the Morse and the Continental, both in despatching and for message work. A large per cent of railroad telegraph operators are using the telegraph now only because the hard times among the railroads prevents them from installing the telephone more extensively. Just as soon as they can see their way clear to appropriate funds for improvements there will be a noticeable extension of the telephone system. The commercial companies as well will fall in line, along with the railroads, by using the telephone to handle their messages. A good typewriter operator at one end of a first class telephone line with a good plain talker at the other will handle an enormous amount of business.

J. L. COSS.

TIPPING ON PULLMAN CARS

NEW YORK.

TO THE EDITOR OF THE RAILWAY AGE GAZETTE:

I hold no brief for the Pullman Company, and if its dividend rate were reduced I should survive; but in view of numerous utterances which have recently appeared, it seems to me, and, I believe, to the average railroad man, that attention should be called to the fact that sleeping-car porters are not the only men who live on tips and their employer not the only rich concern to profit by the tipping habit. Hotels and restaurants are far worse. Those extremely philanthropic newspapers which are now denouncing Robert T. Lincoln, seem to forget that he is but one of eleven directors, all of whom might be willing to pay porters \$150 a month and who yet would not be likely to be able to improve the service or reduce its cost to the passenger, to any appreciable extent. The critics, however, do not forget that the Pullman Company is a corporation, such as legislators like to "jump on," while hotels may make 50 per cent profits and yet are immune to this sweeping journalistic criticism. And what do these newspapers think of the growing practice of giving tips equal to a third or two-thirds of the legitimate bill, such as prevails in barber shops?

The tipping habit is deeply seated in human nature—or at least in the nature of a good many humans who travel. Protests against it seem to be effective only where there is enough poverty to compel remonstrance, as in Europe. Is not poverty the real reason why a 10 per cent tip goes, over there, when many Americans freely give bonuses of 20 to 50 per cent? Again, is not the objection to tips based largely on dissatisfaction with details rather than on principle? Waiters often fall far short of their duty, notwithstanding the tip, and we blame the "system," when we ought to kick the waiter. Young women who serve

as table waiters at summer hotels and use their tips to get an education are not condemned; they are praised; but where is the difference in principle? There is a large degree of truth in Mr. Lincoln's declaration that the sleeping-car service with its high standards and strict discipline has helped to raise the social and economic position of the American negro. I do not write to defend tips, but merely to call the attention of our impartial press to its careless dissemination of a half truth. E. F. L.

MAKING RATES TO DEVELOP TRAFFIC

JAMESTOWN, Cal.

TO THE EDITOR OF THE RAILWAY AGE GAZETTE:

In one of the papers a few days since I noted an article by Peter Radford, lecturer for the National Farmers' Union, referring to the recent action of the Interstate Commerce Commission granting an increase in freight rates in eastern territory. He writes as follows:

The freight rates of the nation have been built up along lines of least resistance. The merchant, the manufacturer, the miner, the miller, the lumberman and the cattleman have had their freight bureaus thoroughly organized and in many instances they have pursued the railroad without mercy. . . . The farmer is seldom represented at rate hearings as his organizations have never had the finances to employ counsel and as a result the products of the plow bear an unequal burden of the expense.

It is just this point of view that the railroads are up against at nearly every hearing—this look-out-for-yourself-and-let-every-one-else-fight-his-own-battle idea that every class of shippers takes and which the average commissioner also holds, although he does not permit the railroads to take the same stand.

Now, it is exactly that point of view that the railroad manager must take if he is to work for the best interests of his road—the best interests in the long run. The traffic manager must look at the question from all angles. "Can I afford to grant Mr. Jones' request for a reduced rate on his salt shipments? Can he continue to operate his plant if I do not? If his plant is closed down what effect will it have on the other revenue from his town. Possibly my road may be supplying groceries, etc., to his employees, which he shall lose. Possibly that is the only revenue we obtain from that shipping point and the salt will be shipped in over the road from other places, and if so what motive have we to keep his plant going at our expense?"

Again, reports from agents and others show that if a reduced rate is named on iron ore a large plant will be erected, many thousands of men employed, large quantities of other freight will be handled, etc. Another officer sees vast acres lying idle and finds that very low rates must be made on grain to induce the owners to cultivate the land. He can handle the grain if offered to him at various points along the line at little or no increase in his operating expenses. Now, what shall he do? Self interest answers the question every time—whatever is better for the road.

Therefore, it does not follow that the farmer is discriminated against by one road because grain rates are not relatively as low as on lumber, nor that the manufacturer is discriminated against by another road because his output does not receive the same rate per ton mile as it does in some other localities.

If the railroad commissions would take some such views as these and permit the roads to advance rates with the same willingness that they grant reductions, I feel certain that there would not be one-half the friction that there is today. Restrictions should be maintained, of course. For instance, if a rate is reduced no increase should be permitted for, say, two years. That would prevent any undue preference to shippers or consignees who might be furnished with advance information of an advance. With the publicity given to all rates today, and the manifest intention of all railroads to refrain from rebating and similar actions, the public would get better service, the roads would employ more men, and purchase more supplies. Particular rates, which might need modification, could be investigated much more quickly than at present. Both carriers and shippers would know how to gage affairs ahead, and I believe it would make prosperity in all times.

S. H. SMITH,
Traffic Manager, Sierra Railway of California.

A DISCIPLINE AND WAGES BUREAU

NEW YORK CITY.

TO THE EDITOR OF THE RAILWAY AGE GAZETTE:

The letter of Mr. White in your issue of May 14 proposing that all labor matters should be put into the hands of a single vice-president, he to have no other duties, and comparing the management of labor with the work of the purchasing agent in connection with material, embodies interesting possibilities, but has he not forgotten the vast difference between a man and a piece of timber or a bar of steel? The idea of a central organization surely is good. Several roads already maintain a bureau of this nature, the New York Central, the Delaware & Hudson, the Erie and the Baltimore & Ohio, for instance. These bureaus collect and keep data in connection with wages, discipline and working conditions. The experience of these roads shows that the department is very useful. Each large railroad should have such a central bureau, with records for all classes of employees in each department. This is necessary if for no other reason than to bring about uniformity of wages on the entire system for the same classes of occupation (except when controlled by outside conditions, such as wages paid in other industries). The man in charge of the bureau can be useful in making uniform the interpretation of rules. By thus maintaining uniformity throughout the different parts of a system grievances are minimized.

But you cannot safely relieve heads of departments—the transportation department, the maintenance of way department, the motive power department, etc.—of the responsibility for their expenses; and if responsible for expenses they must have a voice in fixing the agreements with the employees. And probably the head of each department should have not only a voice, but the deciding voice. Moreover, the men desire to deal with their actual boss. It is true that labor leaders like to appeal to the highest boss, but that does not weaken my point. The appeal from general manager to president is normal and natural; but to have to appeal sidewise, instead of upward, would be unnatural. Imagine a road entrusting negotiations with the trainmen to the vice-president in charge of traffic or of the treasury department. How quickly the employees would make a fuss. Mr. White's proposal is hardly less objectionable. He would appoint a vice-president who had had experience with trainmen, very likely; but a very short time would so affect the mental attitude of this vice-president that he would come to be looked on as a non-technical man; as a mere negotiator, like a lawyer. That is what the purchasing agent is—a mere negotiator.

The head of the bureau having charge of these labor matters should be on the staff of the chief operating officer. He should be subordinate to and have the confidence of the heads of each of the departments for which he keeps data. He is the man to make the requisite investigation of all conditions that arise from day to day and always be prepared to advise, through the head of each department, and furnish for that department all necessary information. The superintendent of a division, for example, should be able to go to this bureau and inform himself fully, so as to be able to deal efficiently with each proposition that may come up within his territory, in relation to the pay of the employees or anything affecting the employees which is likely to disturb their feeling or attitude toward the employer.

Labor cannot be bought on the same principle that a railroad buys material. Unless the officers realize the fundamental difference as to this point, they will be very unlikely to make satisfactory progress in their dealings with the labor situation.

A. V. P.

RAILWAY EXTENSION IN MANCHURIA.—The governor of Tsitsihar is said to be interested in a project to construct a railway from Hailunho to Harbin. The governor's office is collecting information regarding the commercial activity of the Hulan district and the industrial contributions of the district to Harbin. It is proposed to run the railway through Tuichingshan to avoid constructing a bridge across the Sungari river.

Preparing for the Federal Valuation of the Railways

Measures Adopted by the Different Roads Now Being or Soon to Be Inventoried by the Government Forces

No problem with which the railways are confronted today is attracting more attention than the federal valuation of their properties. While concerning primarily the engineering, mechanical, legal, real estate and accounting departments, this work is of live interest to all other departments and its progress is being watched closely. The law providing for the physical valuation of the railways has now been in effect over two years, while government parties have been in the field for over a year. The number of important roads on which this work so far has been undertaken is relatively small, and as the valuation work will ultimately extend over all roads, the methods adopted by the lines first selected for examination by the government are of general interest and value to the others, indicating as they do the preparations which all roads must eventually make. For this reason we outline briefly below the manner in which several of the leading roads now being valued are collecting information for the use of the government and themselves.

The extent to which the roads now, or soon to be, under valuation, are preparing for it varies widely. The government requires all roads to provide right of way and station maps, profiles and certain other data for its use. For their own interests all of the roads are also collecting and presenting to the government forces, all the information they can collect concerning hidden quantities and other elements of value not evident from a surface inspection. Beyond this the methods vary, depending on the amount of money the individual roads feel justified in spending to detect errors and omissions in the government inventory. Some roads only furnish a pilot to accompany each government party to give any further information desired and to endeavor to see that no important items are omitted. Other roads are making complete re-surveys independent of and in advance of the government parties with almost as much detail as the federal forces and are comparing their figures with those furnished them by the government to be sure that all property is included. On other roads are to be found all the various degrees between these two methods.

These variations also result largely from the condition of the records of the individual roads. Some of the older lines possess records of little value as indicating the present condition and value of the property. Other lines have been improved and rebuilt without corresponding revision of the records until this data has become obsolete. In such cases the incentive to revise and correct the records or to make new surveys to secure correct information for the use of the road itself as well as for the government is much greater than on lines recently built and possessing fairly accurate original records of construction. Also, a number of the states, particularly in the middle west, have required the roads to make valuations, and where this has been the case the data was in fairly good shape before the government entered the field. Under such conditions the roads naturally have not gone to the expense of making a complete re-valuation. The methods adopted by the roads under inventory so far have also been influenced largely by the time intervening between the receipt of the government notification and the arrival of the parties. In many cases this has been less than three months, and the amount of preparation possible has therefore been very limited.

CHICAGO & EASTERN ILLINOIS

One of the first roads on which the government began work last year was the Chicago & Eastern Illinois. For this reason the road had only a limited time in which to prepare for the federal parties. However, the methods adopted at that time are in general still being followed on this road, on those divisions on which more time was available for preparation.

Some time previous to the arrival of the federal parties on

a given section of the line, the chief engineer goes over that portion of the line with his valuation engineer, pilots and those employees and others familiar with the portion of the line under consideration in earlier years. Last summer these trips were made with a motor car, and during the more inclement weather last winter by special train. The line is covered at the rate of about 10 miles per hour and an endeavor is made to gather all the information possible regarding conditions encountered in earlier years and not now so plainly evident. A stenographer accompanies the party, taking elaborate notes which are written up on the return to the office. Each item is entered on a separate loose-leaf sheet. One complete set of these sheets is then turned over to the pilot who goes back over this line, checking each item on the ground. He is given two copies of all notes relative to hidden quantities, one copy of which he gives to the government engineer in charge of the party, each engineer attaching his signature to the sheet retained by the other for identification. The pilots were selected from assistant division engineers and have all had from four to eight years' service on the road. Wherever possible the pilots are retained on those divisions on which they have previously been located in maintenance work.

About 12 men were required in the office last summer searching office records and securing statements of men familiar with the lines regarding hidden quantities, etc. As this road signed the agreement with the government whereby it receives copies of the field notes taken by the federal parties, these men are computing the quantities on the older lines in the office from these notes and checking the figures secured by the government on the newer lines with the construction records. During the winter the office force was considerably increased, as new maps were being made for the entire line in accordance with the requirements of the government.

Four federal parties covered about 560 miles of main line last year, comprising practically all the road in Illinois. One bridge and one signal party were also on the same line. Three roadway parties were returned to these lines on March 20. The government is also now starting to inventory the equipment, the present arrangement being for the government and the road each to assign a man to this who will co-operate, and where possible make a joint report. It is understood that the government will endeavor to examine from 10 to 30 per cent of each type of equipment.

The government has had two real estate men at work on these lines during the past winter, while the railway has also employed two real estate men to do the same work for it, following a short distance behind the government men. As it is the policy of the commission to ascertain information concerning real estate entirely independently of the railways, these two parties are working separately.

ROCK ISLAND

The Chicago, Rock Island & Pacific organization is similar in many ways to that of the Chicago & Eastern Illinois.

Previous to the inauguration of this work, the superintendent of each division soon to be under valuation, called a staff meeting at which were present the division engineer, roadmasters, master carpenters, foremen of water service and section foremen. Using the right of way maps and track profiles each section foreman's territory was gone over in turn and each one present was called on to give any information he could remember regarding work done on that particular section in the past, evidence of which could not now be seen on the ground. Stenographic notes were taken of this meeting, which were written up and furnished to the pilot who was to accompany the valuation party over this territory. About a month before the federal party

arrived, the pilot was given these notes together with maps and profiles. He then spent the intervening time searching through the files and records to substantiate the information brought out at this meeting and to supplement it with any further data. He also made one or two trips over his section to become familiar with it before the arrival of the federal party.

No surveys are being made on those lines on which previous valuations have not been made. This road has agreed with the federal engineering board that the railroad pilot and the man in charge of the government party shall proceed over the line and make the inventory. Having signed the agreement in circular No. 1, this road is receiving copies of all field notes taken and also the areas, quantities and overhaul computed in the calculation of grading quantities. In the states in which valuations have previously been made, comparisons are made between the figures secured by the government and those of the earlier valuation. All data concerning hidden quantities is of course furnished the pilot that he may transmit it to the chief of the government party.

The pilots are selected from the older engineering employees on the system who are familiar with the property and who have more or less recollection of work which has been done, of which no records are available. Men are also selected whose experience and ability are such that when the valuation goes into court, if such should be the outcome, they will be acknowledged the equal or the superiors of the men in charge of the government parties. Eight federal roadway parties started on these lines during the past winter and will continue during the coming summer, moving northward. The first parties began work on the lines in Kansas and Oklahoma, where valuations had previously been made for the state. On April 1, 2,000 miles of line had been covered. In addition 3 signal parties have completed 1,000 miles of line.

CENTRAL OF GEORGIA

The Central of Georgia was another of the roads on which the government placed parties early in its work. Because of the short notice given, the road was unable to collect as much information as desired in advance of the work. Pilots were chosen from the corps of assistant engineers in the office of the chief engineer, and were men who had been with this company for several years, who were familiar with conditions along its line and who had from 6 to 10 years' experience in railway construction and maintenance. Before the arrival of the federal parties the pilots walked over their respective lines accompanied by the supervisors and roadmasters to familiarize themselves with conditions in detail and secure any further information they could from old employees regarding any unusual conditions or construction affecting the cost. At the same time the office records and construction notes were carefully examined for the same purpose. As trains have been running between Savannah, Ga., and Macon since 1843, it was impossible to secure any of the original construction records for this or other old lines. There are very good records of those lines built in recent years.

This road signed the agreement with the government by which the road is furnished copies of all field notes which are checked against any information in the possession of the road. Government calculations of quantities are not being refigured, but are being checked against any original construction records available. A valuation of lines in Alabama was made in 1909 for use in a rate case, and the government quantities on these lines are being checked against the data secured at that time.

For a number of years this company has been perfecting its maps and profiles, and the entire line is mapped on a scale of 100 ft. to the inch, showing topography, right of way and section lines and a complete list of deeds, contracts and leases. These maps practically comply with the requirements of the government.

The first government party started to work on this road on July 9, 1914. Since that time other parties have been added until there are now four roadway field parties and one terminal party. They have completed about 1,700 miles of line. The signal department has completed its inventory of interlocking plants, crossing bells, etc. Three telegraph and telephone parties have completed

work on this road. A structural party started work on November 3, and has completed the inventory of bridges and trestles on 1,100 miles. A force of 15 men is at work in the accounting department. An assistant land attorney spent six months of last year identifying all deeds to right of way, securing practically the same information as now called for in order No. 7. The government has started inventory of motive power and equipment, shop machinery, piping, etc. The government has 6 land men at work appraising the land of this company.

THE "SOO"

The lines of the Minneapolis, St. Paul and Sault Ste. Marie may be divided into two classes: First, those built in recent years for which complete records of construction are available and old lines and branches of which the road still has the original records and on which little change has been made since the lines were built; and, second, old lines which have undergone many changes since the original construction and of which there are not complete records. The first class includes about 65 to 70 per cent of the entire mileage.

On those lines on which records are available a pilot engineer is given a complete inventory by I. C. C. accounts of all items to be inventoried, which inventory he checks with records obtained by the government party. This road has signed an agreement with the government whereby it secures copies of all field notes. It is understood that the pilot engineer and the government field engineer will check and agree on all items inventoried from day to day as far as possible. If for any reason differences in quantities cannot be agreed upon, proper record of the differences are made and same are referred to their superiors for adjustment.

On the second class of lines where no accurate construction records are available, the road has placed parties in the field to make complete surveys and to bring the records of inventory up to date. After this data has been collected and compiled the method of procedure will be the same as with the other lines. An office force is also employed in investigating records, completing inventories and in determining in advance as far as possible to what extent field work is necessary to secure the desired information or to check the quantities which the government computes. This force is also employed in gathering and compiling the data and revising the maps and profiles required by the government.

The government placed one party on this line in Dakota on May 1, 1914. Two additional parties were started on this line on October 1. On November 5 these parties were sent south, at which time 400 miles of line had been covered.

GREAT NORTHERN

The Great Northern has organized in somewhat greater detail than the roads referred to previously to secure a complete inventory of its lines. Field parties consisting of an assistant engineer and three men are being sent over the lines in advance of the government parties to obtain the necessary information to correct and bring up to date the existing maps and profiles, and to prepare inventories covering all classes of property. These parties are provided with gasoline motor cars to facilitate their work. Especially designed loose-leaf field books are used and the notes are sent by the assistant engineers to the general valuation division office separately for each consecutive 6 to 10 miles of track covered. A division engineer, selected because of his long and varied experience in railroad construction, is placed in charge of 3 or 4 of these small parties. No recross-sectioning of the roadbed is done by these parties as the grading quantities are being compiled in the office from the records of original construction and of subsequent work. Fairly complete records of this nature are available for about 90 per cent of the mileage of the system. After these grading quantities are tabulated in the general office they are sent to the division engineer to check and compare on the ground to see that all items have been included as far as can be determined from a field inspection.

Seventeen such parties have been employed in this work and

they have covered approximately 4,800 miles of line in Minnesota, North Dakota, South Dakota, Montana, Idaho and Washington, on which the government has expressed a desire to undertake work first. An office force of 40 engineers, draftsmen and clerks is employed in compiling grading quantities from final estimates and other office records, correcting maps and profiles and compiling inventories from the information sent in by the field parties.

Two assistant engineers accompany each government field party as pilots, these men being selected because of their general competency and their general knowledge and experience in connection with the original construction and subsequent improvements on the line being inventoried. Seven government roadway and track field parties were employed on the lines of this company last summer, all being transferred to southern roads late in the fall, after 1,168 miles of line had been covered. Three of these parties were placed in the field by the western district and four by the Pacific district, although a readjustment has now been made whereby all further work on the Great Northern will be handled by the Pacific district alone. All buildings on the 592 miles of line in North Dakota covered by the roadway and track parties last year were inspected by a government structural engineer and an assistant accompanied by a representative of the company. Sketches and general descriptions of all buildings, including furniture and fixtures were prepared by these men.

In the accounting department six clerks were employed in the valuation work by the railroad company last spring. The government placed eight accountants in the offices of the railroad on July 15. The right-of-way department is preparing schedules of right-of-way deeds for the use of the government land men in the field. In addition, the railroad has sent men from the right-of-way department into the field to collect information from the county offices covering all transfers of land from January 1, 1911, to date in each county through which the railway runs. Property owners adjoining the line are being interviewed and their opinions regarding the value of farm lands and town lots obtained, while the latest assessment of these lands is also being obtained and listed. On August 10 two government land attorneys began work on the lines of the Great Northern. After checking over the schedules of deeds in the offices, they secured the same information in the field as secured by the railroad representatives.

KANSAS CITY SOUTHERN

One of the roads which has made a complete survey of its property in advance of the government valuation is the Kansas City Southern. This road decided that the best means of securing to the company a correct valuation of its property was to make independent surveys with its own forces, and to furnish the government with copies of the field notes taken while making these surveys.

These surveys were commenced in November, 1913, and completed in December, 1914. They preceded those of the government, and it was arranged that the pilot who accompanied the government party over any particular portion of road was the same man who had charge of the company's surveys over that particular section. Two pilots were, therefore, alternately in charge of the railroad party and acting as a pilot for the government party.

Individual inspection was made of all company equipment on the line with a view to verifying the existence and determining the condition of the units of equipment. Record was also made at that time of the additions and betterments that have been made on the same. The company representatives have co-operated with the government in making an inventory of the shop machinery and tools. This work has been completed. The inventory of bridges and buildings made by the structural party of the Interstate Commerce Commission, accompanied by representatives of the company, has been completed.

New maps and profiles were made of the entire line and filed with the commission in compliance with the map order. These

maps and profiles were made from existing records and notes taken by the company forces in the field. A report has been made on property abandoned by the company during its development and filed with the commission in compliance with valuation order No. 2.

An organization is maintained for the purpose of compiling data in order to comply with the valuation orders issued by the commission at various times, and for developing expenditures which have been made for various items going to make up the cost of the property, such as assessments for public improvements, expenditures account, acquisition of right of way, damages, extraordinary construction, expense, etc.

The government has had five land appraisers in the field determining the market value of lands adjacent and adjoining the right of way, and have completed their work for the entire line with the exception of certain terminals.

BOSTON & MAINE

The Boston & Maine is also making complete surveys of large portions of its lines. After being notified in February, 1914, that the government expected to place parties on its line on May 1, a careful inspection of the maps in the files was made, showing that maps could be completed in accordance with the requirements of the government for about 1,000 miles of line with a small amount of work. Draftsmen at once began making new tracings to the required standards, and four survey parties consisting of two men each went out over these lines collecting missing information and adding further data required by the commission.

For the remaining 1,500 miles it was necessary to make complete surveys. For this purpose nine parties of five men each, one of whom is a draftsman, were placed in the field. These parties prepare maps on a 100-ft. scale showing all buildings and other property on the right-of-way and send them into the general office in approximately 5-mile lengths as fast as they are finished and inked. These maps are then completed in the general office in accordance with the government specifications after the land lines and data regarding deeds and other records have been added. Prints of these plans are then given to the government forces as they start on the various sections.

A pilot and a computer are assigned to accompany each of the government track and roadway parties in the field, the pilot representing the railroad and seeing that all property is included in the inventory while the computer works in the field office with the government employees checking computations. For the assistance of the pilots a "hidden quantity" squad has been organized to investigate all records, books, plans, etc. All the available information regarding the conditions of bridges, buildings and other physical property, such as ties, etc., is also being compiled. The tie records, for instance, show the annual replacement by individual years for the last nine years with the percentage of renewals for each year and the segregated renewals for the entire period. The government forces are accepting these records and prepare their final segregation of ties from them.

The government also has a bridge and building party on these lines with which the railroad has assigned a bridge and building man and a computer. There are also a signal and a telegraph and telephone party on this line. Five roadway and track parties on these lines covered about 650 miles of line to January 1, 1915, in addition to the other parties just enumerated.

The government right-of-way appraisers started work on the Boston & Maine last May. An assistant attorney is engaged in checking the records in the office, while five appraisers are at work in the field securing data regarding the value of adjacent lands, etc. The land department of the railroad is also securing the same information and has examiners going through all the registries securing abstracts of all deeds in the name of the railroad. This has been necessary as in many cases the files of the company were incomplete in this respect. The government land appraisers have completed about 400 miles of line.

STEEL PASSENGER TRAIN EQUIPMENT

To ascertain the progress of the building of steel and steel underframe passenger equipment and to develop the cost of reconstruction in steel of the present wooden passenger equipment in the country, the Special Committee on Relations of Railway Operation to Legislation issued a circular letter to the railways on January 2, 1915. Replies have been received from 284 companies operating 245,721 miles in the United States, and 62,112 passenger equipment vehicles, with 956 under construction on January 1, 1915. The tabulations based on these replies have been published in Bulletin No. 67, showing that of the cars under construction on January 1, 725 were all-steel, 228 steel underframe and 3 wood, and of the 4,495 cars acquired in the calendar year 1914, 3,355 were all-steel, 940 steel underframe and 200 wood, including 56 cars purchased second hand. Of the total number of passenger train cars in service on December 31, 1914, 12,900 were all-steel, 5,700 steel underframe and 43,512 were wood. The character of the various classes of equipment in service on December 31, 1914, is shown in the following table:

	Steel	Steel underframe	Wood
Postal	888	217	461
Mail and baggage	668	404	2,562
Mail, baggage and passenger	31	56	579
Baggage and passenger	528	227	3,519
Baggage or express	1,478	1,315	7,507
Passenger	5,105	1,704	22,266
Parlor, sleeping and dining	3,200	1,526	5,353
Business	32	109	730
Motor	970	142	535
Total United States	12,900	5,700	43,512

A table is also given in the bulletin showing that for the cars acquired during the past six years the percentage of all-steel cars has increased from 26 to 74.6, while the percentage of steel underframe cars has ranged from 14.8 per cent to 30.4 per cent, and was 20.9 per cent in 1914. The percentage of new wooden cars built has decreased steadily from 51.4 per cent in 1909 to 4.5 per cent in 1914.

Another table shows that the number of all steel cars in service has grown from 629 in 1909, an increase of 1,951 per cent, while the number of steel underframe cars has grown from 673, an increase of 747 per cent. A total of 4,614 wooden cars has been retired in three years. Of this number 1,048 were retired during the calendar year 1914. The bulletin also gives the following table showing the approximate cost of replacement of wooden cars:

APPROXIMATE COST OF REPLACEMENT OF WOODEN CARS			
	Number	Average cost	Amount
Postal	461	\$11,000	\$5,071,000
Mail and baggage	2,562	10,000	25,620,000
Mail, baggage and passenger	579	10,000	5,790,000
Baggage and passenger	3,519	10,000	35,190,000
Baggage or express	7,507	8,500	63,809,500
Passenger	22,266	12,800	285,004,800
Parlor, sleeping, dining	5,353	22,000	117,766,000
Business	730	15,000	10,950,000
Motor	535	20,000	10,700,000
Total	43,512		\$559,901,900
Annual interest charge at 5 per cent			\$ 27,995,095

The charge to operating expenses under the classification accounts of the Interstate Commerce Commission, assuming a value of \$4,000 per vehicle replaced, would be \$174,048,000.

Replies were also received from 10 companies operating 27,628 miles in Canada, showing that of a total of 5,366 passenger train cars in service on December 31, 1914, 79 were all-steel, 187 steel underframe and 5,100 were wood. Of 57 cars under construction on December 31, 38 were all-steel, 16 steel underframe and 3 wood.

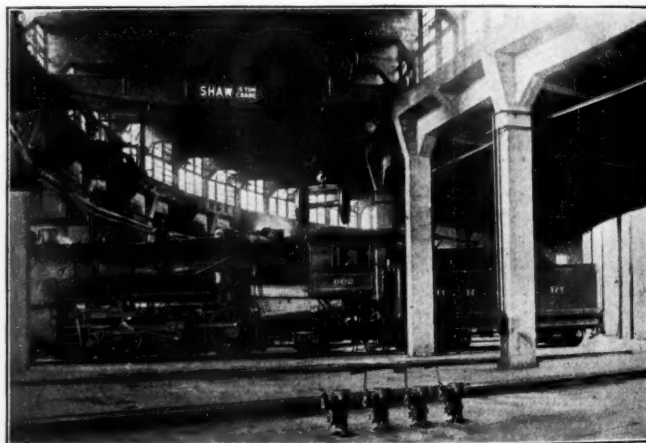
PORT OF LONDON AUTHORITY MEN AND THE COLORS.—The total number of employees of the Port of London Authority who have been called up or have volunteered for active service is 2,009, including 238 men specially recruited for the army service corps. Up to April 29 the number who had lost their lives while serving with the forces was 53. Of these 24 were in the navy and 29 in the army.

A MODERN CONCRETE AND BRICK ROUNDHOUSE AT DU BOIS, PA.

The Buffalo, Rochester & Pittsburgh has completed a 16-stall roundhouse of reinforced concrete at Du Bois, Pa., directly opposite the old 16-stall brick roundhouse, which is too short for the large locomotives and which will be used for the smaller engines only. Both houses are served by the one turntable. The new house is 105 ft. deep with the inner circle 91 ft. from the center of the turntable.

The foundations for all walls and columns are of concrete carried on piles driven to refusal and cut off 8 ft. below the top of rail in the house, the latter elevation being 2 in. above the top of rail in the adjacent yard. The piles extend 12 in. into the wall foundations, which are reinforced with two rows of 80-lb. rail. The outside walls are of brick 13 in. thick with pilasters 17 in. deep, built separately from the wall. The window panels in the rear wall are built in units so that if struck by a locomotive only the single panel will be damaged and the beams and roof girders will not be injured.

The columns, girders, beams and roof slabs are of concrete reinforced with Kahn shear bars and twisted steel rods. The unit stresses adopted were 16,000 lb. per sq. in. for steel in tension and 500 lb. per sq. in. for concrete in compression.



Interior of B. R. & P. Roundhouse

The roof consists of 5-in. concrete slabs supported on concrete beams 34 in. deep and 14 in. wide over the outer bay, 6-in. concrete slabs on concrete beams 57 in. deep and 18 in. wide over the center bay and 5-in. concrete slabs on concrete beams 38 in. deep and 16 in. wide over the inner bay. These slabs are covered with Johns-Manville asphalt roofing, which company also furnished the Transite asbestos smoke jacks.

Each stall is provided with an engine pit 76 ft. long, 4 ft. wide and 2 ft. 6 in. deep, built of concrete with the running rail carried on 8-in. by 12-in. creosoted yellow pine timbers supported on the side walls. The pit slopes 6 in. towards sumps at each end, where the water escapes through 8-in. sewer pipes. The floor of the pit is of concrete 15 in. thick, reinforced transversely by 80-lb. rails 8 ft. long at intervals of 4 ft.

Three stalls are provided with double drop pits 7 ft. 6 in. wide and 6 ft. deep, which are lighted with 60-watt Tungsten lamps recessed in the walls in each side of the pit. Outside of the pits the floor is of concrete 6 in. deep, reinforced in the center with triangular wire mesh and carried on 8 in. of cinders. The windows and doors are of wood construction. The upper and lower sash of the windows are balanced and the center sash fixed. The transom sash in the upper portion of the middle bays are provided with opening devices operated from the crane track.

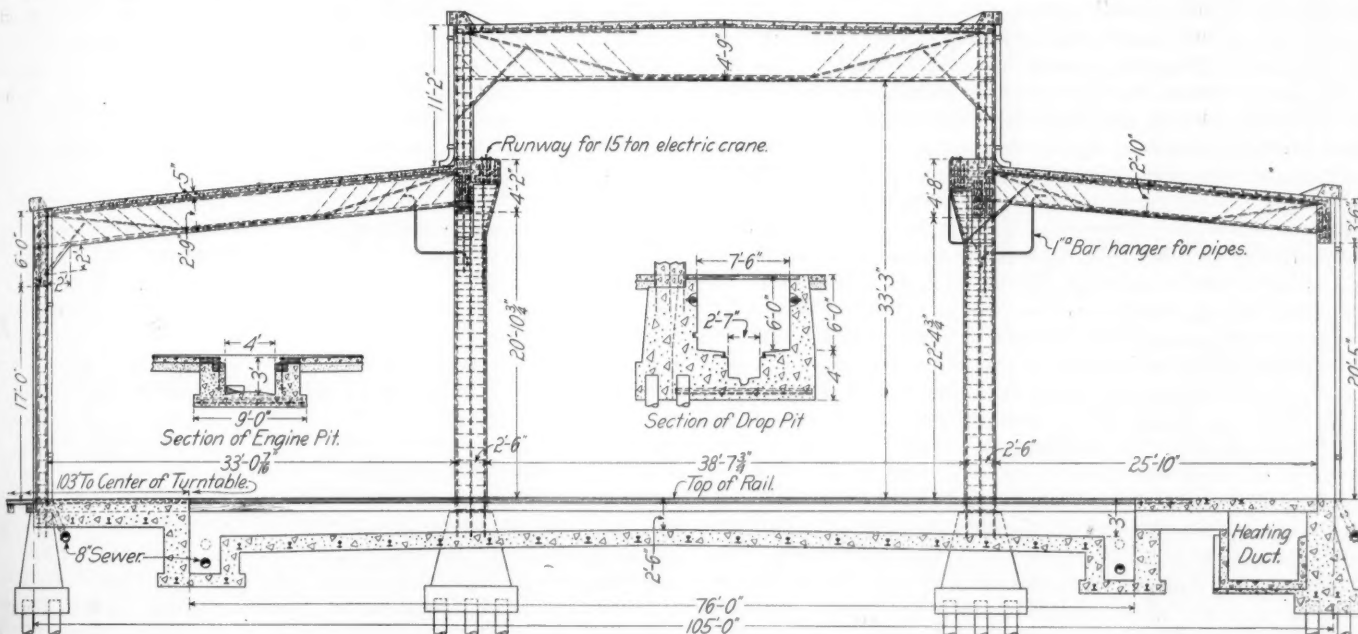
A 38-ft. 15-ton Shaw electric crane runs through the center

bay of the house on a circular track 27 ft. 5 in. above the main track. This crane is installed for the handling of engine cabs, front ends and other heavy parts.

At the outer end of stalls 13 and 14 there is an addition 29 ft. long divided into two portions, one of which is given up to the heating plant and the other to the boiler washing plant. The house is heated with a fan system built and in-

In connection with the construction of this house a 90 ft. design for Cooper's E-60 loading was installed with a concrete pit replacing a 70 ft. deck turntable designed for Cooper's E-40 loading.

This structure was designed under the direction of E. F. Robinson, chief engineer, and W. F. Pond, office engineer, in co-operation with F. J. Harrison, superintendent of motive



Cross Section of Reinforced Concrete Roundhouse at Du Bois, Pa.

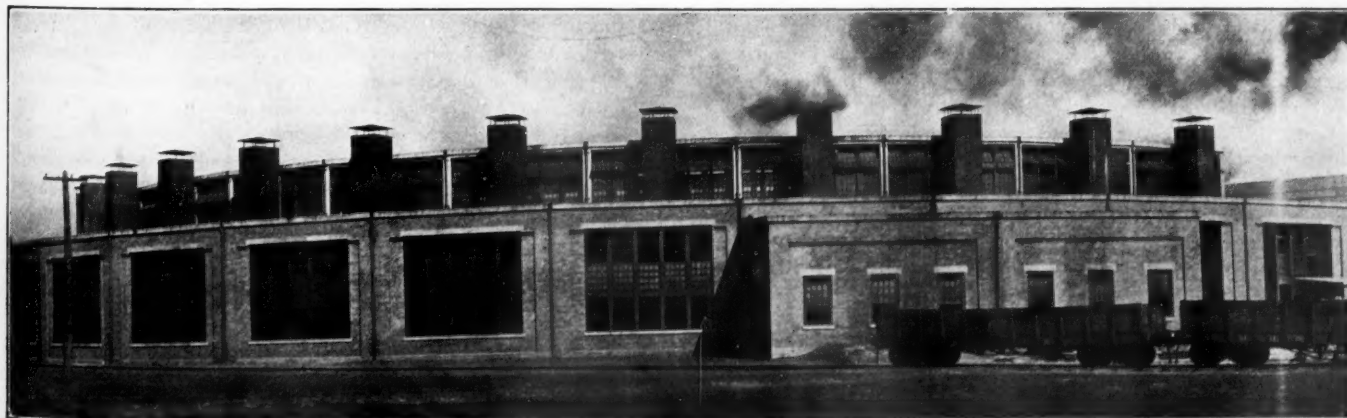
stalled by the Buffalo Forge Company, Buffalo, N. Y., the warm air being forced through underground ducts with outlets in the sides of each of the engine pits. A Cowles-MacDowell boiler washout system is also installed with a capacity of 6 engines per 24 hours.

The house is lighted by means of bull's-eye reflectors placed at the ends of each stall, one on each door post and two on each brick pilaster at the back of each stall in such a manner as to avoid shadows. General illumination is provided by clusters in the upper roof. Plugs are also inserted in each

power, and W. J. Knox, mechanical engineer. It was built by railway company forces under the supervision of G. H. Stewart, master mason.

CORRECTION

In the description of the new line of the Chesapeake & Ohio Northern from Waverly, Ohio, to Edgington, Ky., in the issue of May 14, page 1018, the statement that 40,000,000 lin. ft. of timber piling was required, should have read 40,000



New B. R. & P. Reinforced Concrete Roundhouse at Du Bois, Pa.

column for the use of portable extension lamps. All conduits and boxes are built in the concrete.

Because of unfavorable local drainage conditions a concrete sump was installed with an automatic electric centrifugal deck turntable of the standard American Bridge Company's sump pump to receive and dispose of the roof and pit drainage.

lin. ft. While this error was undoubtedly evident to our readers we make this correction.

COOLING APPARATUS ON EGYPTIAN RAILWAY CARS.—Tanks to hold half a ton of ice and electric fans to circulate the air from them are used to cool the interior of passenger cars of the Egyptian state railways.

THE RAILROAD ACCOUNTING OFFICER

By H. W. DAVIES

Auditor of the Pacific & Idaho Northern

If the railroad accounting officer is not exercising his full usefulness in the interest of the company he serves it may either be his fault, or it may be due to a condition, or conditions, over which he has no control, and which conditions create his limitations.

It is not an infrequent case, that an accounting officer, unconsciously or otherwise, creates his own limitations; the one cause more common than any other is probably his satisfaction in acceptably fulfilling the rules and requirements prescribed by the Interstate Commerce Commission on the one hand, and the railroad accounting rules and requirements on the other hand; and finally, submitting on time the monthly balance sheet, income statements and other subsidiary reports; which, when accomplished without bringing forth criticisms, is logically accepted as commendation of services well performed. The natural assumption is, and rightly so, that the successful fulfilment of the requirements named carries with it a successfully organized accounting department, which of necessity must exist to meet properly such difficult and varied requirements.

An officer in charge of an accounting department so thoroughly and successfully organized as to fulfil satisfactorily the requirements mentioned, and at the same time to take care of, and keep up to date, his collections, and the many subordinate, though important, branches of his department which contribute to the results as a whole, is indeed to be complimented. He is from a purely accounting standpoint, to be considered an expert and successful accounting officer. And yet, on the face of it, it will be apparent that though the results may embody correctness, completeness and promptness, requiring skill, energy and force of the highest order, it is but fulfilling certain prescribed rules and requirements, which in themselves are but a small part of the economical management of a railroad. Is such a successful and expert accounting officer, in accomplishing such excellent individual results, giving his company the full benefit of his ability? As an accounting officer, very probably, yes; as an officer of the company interested in all its departments and ramifications, no.

Certain department jealousies always have and probably always will exist in all large organizations, whether manufacturing or otherwise, and especially with railroads. The traffic and transportation departments differ over light tonnage cars, the roadway and mechanical departments over derailments, the mechanical and supply departments over supplies. Other natural conditions which affect two departments, whether as to cause or effect, create these little jealousies, and the accounting department gets its share from all other departments. This question of department jealousy may, or may not, properly have any place in connection with the question under discussion. However, if not a direct, it is possibly a contributory cause for the lack of recognition on the part of the management, in many cases, as to the possible usefulness of the accounting officer in the handling of matters not strictly accounting.

The accounting officer is essentially a man of intelligence, at least equal to if not above the average; this coupled with his position as custodian of reports and records from all departments, easily accessible for his examination and comparison, equips him with valuable material not in possession of others, and thus peculiarly fits him for dealing with matters other than those strictly accounting, which could be developed to the interest of the company, and which would otherwise probable be lost sight of. The accounting officer while not necessarily an expert statistician or economist, is by virtue of his constant dealing with figures, earnings and expenses, tonnage and mileage, etc., unconsciously if not consciously, trained to see conditions, conspicuous in detail but not always apparent by mere perusal or study of the condensed reports. Especially is this true with the smaller and middle size railroads which do not employ efficiency men or statisticians, or have in use forms for detailed daily re-

ports to the heads of the different branches of the operating department, by which they can secure the same detailed information which goes to the accounting department.

The monthly report may show engine fuel consumption comparing very favorably for one month as against the previous month, or with the same month in the previous year; and yet, in detail it will very probably be found that two engines of the same class, under similar running conditions, will show a very marked difference, indicating the lack of efficiency in the running of one engine as against another. The monthly report may show the cost of crosstie renewals comparing very favorably with the previous month or with the previous year; yet, an analysis will possibly show a considerably less number of ties laid with a large increase of labor expense not justifiable by conditions.

The matter of station labor, clerical and manual, usually under the jurisdiction and full control of the division superintendent, and frequently left to his sole judgment, is, in many cases, capable of a more equitable and profitable adjustment by the accounting officer, and especially is this true at larger stations.

The president or general manager is invariably forced to delegate the signing of vouchers to some one else, who, while in a position to recognize the validity or lack of authority for the transaction itself, is not in a position to determine of his own knowledge, the reasonableness or excess of the voucher; the auditor, by virtue of his peculiar position of vantage, could be of valuable assistance by bringing to the attention of the proper officer, cases seemingly worthy of investigation, of which there are many.

There is an old saying, "the treasurer is the watchdog of the treasury." This is no doubt still true in a measure; but broadly applied in these days of forced economy, it can be properly said of all other departments, since values are measured not merely by dollars and cents in the treasury, but by material and labor also. Therefore, the accounting officer is as much a watchdog of the treasury as any one, and in many cases similar to those just cited could extend his usefulness to the success of the company beyond that of a "mere" accountant. Opinions will differ very materially as to the proper limitations of the application of mind, force and energy of any one department, especially when that department encroaches upon another. Yet, the general manager, privileged to question acts and to correct irregularities in all departments with his many important duties, finds it a physical impossibility to analyze the results of all departments to the extent of details. However, details are also important in contributing to the success of the road's operation, and the general manager is, therefore, dependent upon voluntary information to a large degree, before he can know of certain irregularities or be able to correct them. These same limitations exist in all departments to a greater or less degree. The very fact that the departments themselves exist, has established certain unwritten laws, recognized by nearly all railroad officers who are invariably governed thereby.

Divisions or departments are essential in all large enterprises, as segregating the several distinct factors or classes of work. Each class of work is distinct and separate as to skill and individual purpose, and carries respective responsibilities, and serves various other purposes not possible but by segregation. And yet, while each department represents separate skill, and turns out distinctly different products, they are but units or parts of the whole, and are each interested in the successful production of the finished article to which they contribute; and to whatever extent one department slights its workmanship, or unreasonably increases its cost, it reflects itself in the finished product, and in turn reflects itself on all departments. Criticisms, therefore, should be unhampered, solicited and freely given, but given and accepted in the fairest of spirit, as assistance rendered by one department to another for its benefit and in the interest of the company and not especially to the individual. The accounting officer can serve as an important factor in accomplishing these results.

International Railway Fuel Association Convention

Mechanical Stokers; Fuel Oil; Storage of Coal; Front Ends, Grates and Ash Pans and the Closing Exercises

A report of the first two days of this convention was published in last week's issue of the *Railway Age Gazette*, page 1054. The following is a report of the remaining sessions of the convention:

MECHANICAL STOKERS

The mechanical stoker today is practical, operating at a mechanical firing efficiency of 90 per cent or more, and effects operating economies that cannot be otherwise obtained—it is no longer in the experimental stage. Improvements in the design and construction of stokers will no doubt be made for many years to come. Locomotive design will undoubtedly be modified until the stoker becomes a part of the original design instead of being merely an attachment to the locomotive, as at present. Notwithstanding the necessity for further improvements, the fact can no longer be questioned that the mechanical stoker today is an important factor in railroad operation and must be recognized as such by all thoughtful railroad officers.

The real economy of the stoker is in the increased tonnage that can be handled by stoker-fired locomotives—not in the saving of fuel, as seems to be the general impression. The large, mechanically-fired locomotives of today are able to handle more tonnage than the same locomotives would be given if hand-fired, and handle this tonnage at a higher speed and with greater certainty than under hand-firing conditions. The development of the stoker has made possible the development of locomotives designed to burn coal continuously at a rate in excess of the capacity of the ordinary fireman to supply it. The real reason, therefore, for the improvement and adoption of the mechanical stoker is found in the economic necessity of reduced operating costs. The capacity of locomotives already in service may be increased and cheaper grades of fuel may be used on such locomotives, with the locomotive stoker.

According to the most reliable figures obtainable at the present time (April 1, 1915) and not including the experimental stokers, there are at the present time approximately 935 locomotives equipped with stokers on about twenty different lines of railroad.

There seems to be no fixed factor which can be used as a sure guide as to what constitutes a stoker job. One report indicates that any locomotive of 200,000 lb. total engine weight, with cylinders of 22 in. or over should be operated with stoker-firing. A second report states that engines having a tractive effort of 50,000 lb. or over should be stoker-fired. It seems to be the consensus of opinion that locomotives should be hand-fired when the coal consumption for extended periods does not exceed 4,000 lb. per hour.

The consensus of opinion is that the stoker will give about 10 per cent increased tonnage capacity, as compared with hand-firing, under the same conditions as to grade and time. Some believe that the tonnage increase will be more than 10 per cent. It should not be expected that stoker-firing will show any advantage in this respect where the job is within the capacity of a competent fireman. Stoker engines will make better time than hand-fired engines and while doing so will haul more tonnage than can be hauled with engines that are hand-fired.

It has not been the intention in the design of the Crawford stoker to use any cheaper grade of fuel than is used on similar engines that are hand-fired, nor does the Crawford stoker require the use of prepared coal. Both the Hanna Locomotive Stoker Company and the Locomotive Stoker Company state that their stoker will handle cheaper grades of fuel than can be successfully hand-fired, and that their stokers will enable locomotives to use some grades of coal that would be impossible

with hand-firing. The Erie's experience does not indicate that a cheaper grade of fuel should be used.

The consensus of opinion seems to be that stoker-firing will not show a saving in the gross amount of fuel used, although there is a slight diversity of opinion on this subject. It is believed that there will be a saving on the basis of the amount of coal burned per thousand ton miles. This is due to the fact that additional tonnage is handled by stoker-fired engines with about the same gross amount of coal as with hand-fired engines. A marked saving is also made by the use of less expensive fuel.

While the stoker is a factor in increasing locomotive efficiency—that is, while it increases locomotive tonnage capacity to such an extent as to overbalance considerations as to first cost and maintenance costs—it is not a device for saving fuel. The real economy of the stoker is in the increased tonnage that can be handled. This is the meat of the whole stoker proposition. If increased capacity of locomotives is desired, then stokers are economical. If economical evaporation is what is required on large engines, its attainment may result in a sacrifice of maximum tonnage capacity.

Black smoke can be made with both hand and stoker-firing, or it can be eliminated by careful stoker or hand-firing. Average stoker-firing will probably show less black smoke than average hand-firing, because the coal is delivered to the fire in smaller quantities at a time.

There is less liability of engine failures with stoker-fired engines, owing to the fact that the stoker practically eliminates the necessity of opening the fire-door. Thus a more even temperature is maintained in the firebox, with less liability of leaky flues. In addition to this, if the engine should have leaky flues and bad grates or a bad fire, steam pressure can often be maintained with a stoker, when under hand-firing it would be impossible to keep up steam. Records to date indicate that firebox troubles are less on stoker-fired engines than on hand-fired engines.

The most important phase of the stoker proposition is that the engineer does not have to figure on the stoker tiring out, and is willing to work his engine to its full capacity under all conditions; whereas, under certain conditions with hand-firing, it would not be expected that the fireman could stand up against the largest engines when they were worked to full capacity. It is for this reason that increased tonnage can be handled with a stoker-fired engine, closer meets can be figured on and made, and better general results obtained.

The first cost of stoker installation, giving approximate figures only, is somewhere between \$1,500 and \$1,700. Maintenance costs, including interest on the original investment, are anywhere from 1/2 cent to 1 cent per mile. Maintenance cost figures at the present time, however, are not particularly reliable on account of the fact that more or less experimental work is being done with these stokers. It is generally stated that stoker maintenance costs do not nullify the saving in fuel cost possible where the stoker uses a cheaper grade of fuel. The only figures that have been presented on the cost of lubricating the stoker show the cost to be about \$1 per 1,000 locomotive miles.

There is no added probability of engine failures which are not stoker failures on stoker-fired engines; and the reverse seems to be the case, on account of reduced liability of boiler failures. The consensus of opinion seems to be that a stoker failure should not imply even a partial engine failure, although the instructions on some roads are that in case of a complete stoker failure, tonnage will be reduced to hand-firing rating. One road reports that a stoker failure means a complete engine failure on account of the fact that such a low grade of fuel is used on

stoker-fired engines that hand-firing cannot be successfully performed with this fuel.

A skilled fireman must be employed on stoker engines, owing to the fact that it is occasionally necessary to resort to hand-firing for short distances, and to the fact that in the case of a partial, or complete stoker failure, hand-firing is necessary. The stoker makes the fireman's job a better one. He makes more money, on account of being able to follow his engine more closely, and a large percentage of the manual labor necessary with hand-firing is eliminated. Any good fireman can easily learn to operate a stoker. A fire which is properly prepared for hand-firing is all right for stoker-firing.

There should be no reason for a failure of the stoker equipment holding an engine beyond the ordinary time required for turning. In fact there are no repair jobs on a stoker that would necessitate delay, providing a proper stock of repair parts is kept on hand and the work handled promptly.

The Pennsylvania record with the Crawford stoker, covering a total of 204,922 trips, including all of the experimental trips during the time the stoker was being developed, shows an efficiency of 83.8 per cent. It can be readily understood that present efficiency is considerably higher than this figure. A six months' record of the use of stokers on the Norfolk & Western shows 97½ per cent efficiency, which makes the statement that the stoker is over 90 per cent efficient at the present time seem conservative. Roads having a considerable number of stokers in service show a performance of over 50,000 miles per engine failure on stoker-fired locomotives.

It seems conservative to state that the stoker will show a very satisfactory fuel economy based on ton-mile performance. That is, while it may not show a reduction in the gross amount of coal consumed per trip, it will show that it can haul more tonnage than a hand-fired engine using about the same gross quantity of the same or a cheaper grade of fuel.

From the coal producers' standpoint, the increased demand for slack coal and screenings for stoker-fired engines will no doubt be of benefit.

The stoker permits general operating efficiencies that would be otherwise impossible. Trainloads can be increased by the application of stokers to locomotives where the cost of grade reduction would be prohibitive or where bridge weights or terminal facilities, or both, might prohibit the introduction of heavier and larger power. On districts where train movement is so frequent as to approach the limit of single or double track capacity the increased speed of trains hauled by stoker-fired locomotives, together with the increased tonnage of such trains, will assist in relieving the congested conditions.

The stoker entirely obviates any question of the necessity for two firemen on large engines.

The stoker lives up to its worth, maintaining maximum steam pressure uniformly when the engine is worked at 100 per cent cut-off or at shorter cut-offs and higher speeds. To sum it all up, the stoker, even in its present state of development, pays and pays well in every case where a real stoker job is indicated.

The development of the stoker makes the design of larger locomotives possible and practicable. In fact, locomotives have been purchased within the last two years and are being built today which would neither have been purchased nor built had it been necessary to have them hand-fired. This refers particularly to the very large Santa Fe type Mallet and Triplex engines.

In closing this report the committee begs leave to call the attention of this association to the fact that the stoker has arrived. It is a success, and, furthermore, it is an absolute necessity from an economical operating standpoint for a great number of the large engines of the present day.

The report is signed by: D. C. Buell (U. P.); W. C. Hayes (Erie); A. N. Willsie (C. B. & Q.); T. R. Cook (Penn.); R. Emerson (S. L. & S. F.); O. L. Lindrew (Ill. Cent.); L. R. Pyle (M. St. P. & S. S. M.); Edw. C. Schmidt (Uni. of Ill.); and C. A. Spaulding (C. & N. W.).

DISCUSSION

It was the general opinion that fuel economy should be considered secondary to the operating advantages the mechanical stoker presents; that is to say, its ability to increase the boiler capacity and thereby permit greater tonnage to be handled at higher speeds warrants a sacrifice in the economical use of fuel. However, tests comparing the stoker with hand firing have in some instances shown an increase of evaporation.

E. A. Averill, of the Standard Stoker Company, called attention to comparative tests made on the Pennsylvania division of the New York Central. Four stoker fired and five hand fired tests were made under as near similar conditions as possible with the same engine, crew, tonnage, etc. However, a poorer grade of fuel was used on the stoker fired engines, this fuel averaging 13,711 B. t. u., as against 14,494 B. t. u. for the hand fired engines. Mr. Averill said: "These tests indicate clearly the following: First, the locomotive when stoker fired evaporated 7.4 per cent more water per unit of heat supplied; second, 18.6 per cent more coal of 5.4 per cent lower heat value was burned per square foot of grate area per hour by the stoker, resulting in the generation of 18.8 per cent more steam; third, while the power in the cylinder was increased 20.2 per cent, if gaged by the amount of steam consumed the amount of dry coal used for the stoker increased but 15.9 per cent and was a 5.4 per cent lower heat value."

Additional tests were made with an increase in tonnage for the stoker, which showed: "First, the locomotive when stoker fired pulled 12.1 per cent greater tonnage at 10.4 per cent greater speed with an increase of but 12.2 per cent in dry coal, which was of 5.3 per cent lower heat value; second, when stoker fired the boiler evaporated 11 per cent more water per unit of heat supplied; third, the power, as judged by the amount of steam consumed by the cylinders per hour, increased 35.5 per cent, while the dry coal per hour increased but 24.2 per cent and was of 5.3 per cent lower in heat value on the stoker fired run; fourth, the cost of coal per million heat units in available steam was decreased 8.5 per cent by the stoker."

A. N. Willsie, Chicago, Burlington & Quincy, stated that from road tests made with stoker and hand-fired Mikado engines of the same class it had been found that 435 tons more could be handled with the stoker than with the hand-fired engine and that 31 minutes were saved on a 156-mile division. The cost of fuel for 10,000 ton miles for the hand-fired locomotive was 45 cents, while that for the stoker fired was 41 cents. On the 2-10-2 type engine, stoker fired, it was found that 1,483 more tons could be handled than with the hand-fired Mikado, at a cost of 34 cents per 10,000 ton miles. F. Kirby, of the Baltimore & Ohio, stated that by use of the stokers the fuel consumption per 10,000 gross ton miles had been reduced 3 lb. and that the tonnage had been increased from 5,450 tons to 6,000 tons.

W. S. Bartholomew, president of the Locomotive Stoker Company, sketched the development of the stoker briefly and stated that this device did not generally find a market until the engines got so large that it was necessary to mechanically fire them in order to obtain their full boiler capacity. The problem for the stoker manufacturers now is to work out a development of the stoker that will provide for the economical use of fuel. Most any kind of coal can be used and from the mechanical standpoint the stoker is a success. Regarding the use of pulverized fuel he believed that there was a distinct field for that as well as the stoker, as the stoker eliminated the necessity of pulverizing the fuel, which must be done at more or less expense, and that many of the advantages to be derived from the use of pulverized fuel will also be obtained in stoker-fired engines. He also strongly favored the use of the brick arch on locomotives with automatic stokers.

FUEL OIL FOR LOCOMOTIVE USE

By G. M. BEAN

Pacific Coast Representative, American Arch Company, Los Angeles, Cal.

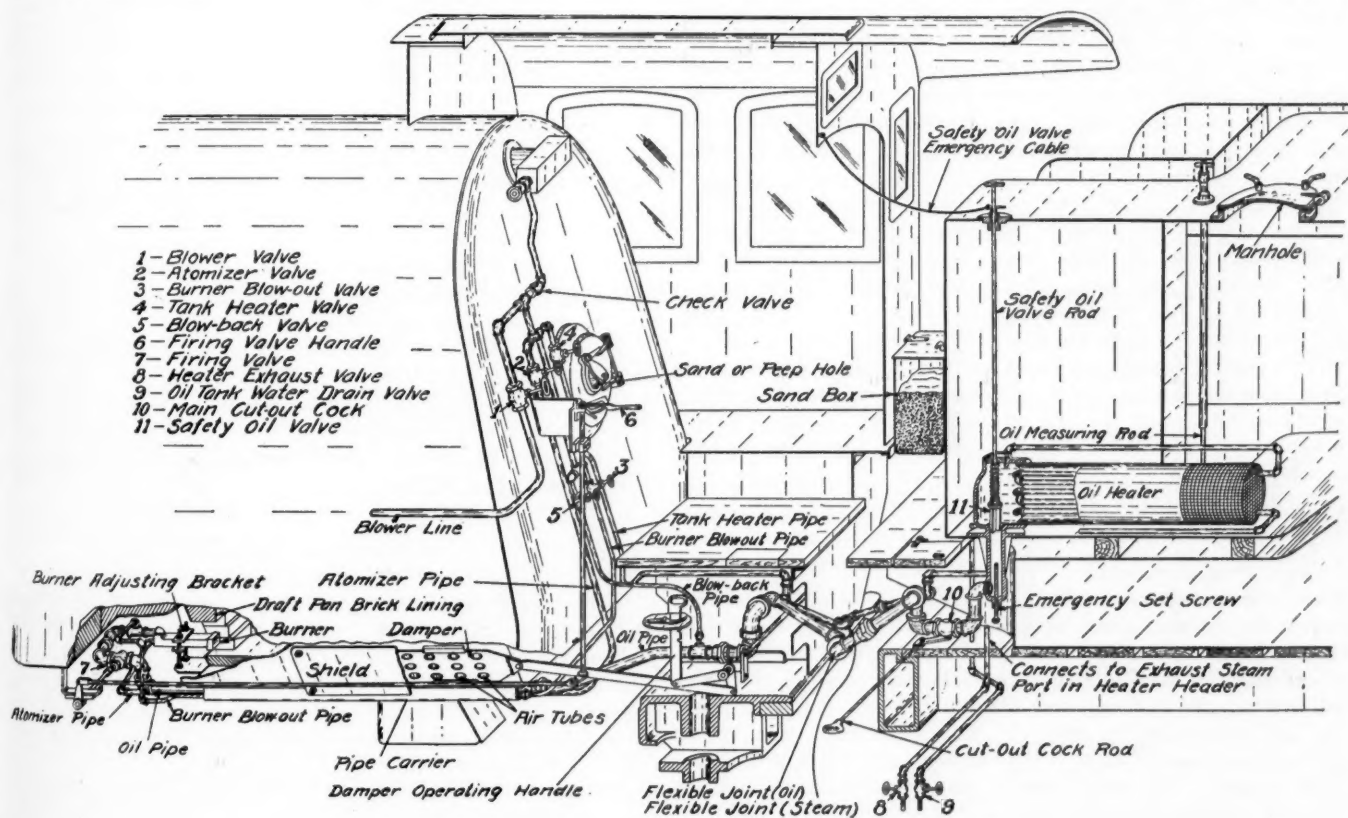
From 1907 to 1914 the use of fuel oil by railroads increased 112 per cent when a total of 31,000 miles, distributed over 50 railways, were operated with this fuel. A study of the use of fuel oil in the locomotive furnace is extremely interesting, because it offers problems that are not met with in other fuels.

With liquid fuel the diffusion must be simultaneous with ignition, with the resultant long flame, and a large furnace volume is essential. While the relative dimensions are of minor import to the volume, it is evident that a flame passage of sufficient length must be provided to prevent unconsumed particles passing to the flues. While it is generally conceded that lack of oxygen is responsible for smoke, the writer believes that restricted furnace volume and the attending lack of time for the proper mixture of the gases in the more highly heated portion of the furnace is the most common cause for black smoke from an oil-burning locomotive. Special attention is directed to this point in connection with locomotive oil-burner furnace design

The proper maintenance of brick work is essential to good results, and the possibility of the brick work falling down in the path of the flame must be avoided, as it usually results in an engine failure.

The oil supply is carried in tanks built to fill the coal space of the tender, and piped from there through suitable connections to the burner. It is generally necessary to provide means for heating the oil so as to insure a proper flow, as gravity is depended on for the necessary pressure. It is probable that the box heater is the most desirable arrangement. It is indirect in its action, only heating a sufficient volume to insure a supply at the burner, and is not liable to cause trouble by allowing water to get into the oil storage.

The illustration shows in detail the general arrangement of oil burner equipment which represents the latest standard practice as applied to locomotives of the Atchison, Topeka & Santa Fe, and is probably as complete and efficient as any so far devised. The indirect heater, together with the large direct oil supply line from oil tank to burner, insures ability to handle the heaviest of oils. The special attention of those interested in the subject of efficiency of oil burner handling and equipment, is



Standard Oil Burner Arrangement; Atchison, Topeka & Santa Fe

because of the general tendency to restrict the furnace volume by carrying the draft pan and brick work too high in the firebox covering up valuable heating surface and bringing about the continual necessity for forcing the fire at the expense of the remaining exposed surfaces.

At the first inception of the idea of using oil in this country the burner was placed under the rear of the firebox and directed forward with an upward incline so that the flame shot under a low, short brick arch, with the result that combustion became so intense in this limited space as to cause the flame to pass from under the arch with such velocity as to impinge on the door sheet, side sheets, and crown sheet, with very detrimental results. The burner is now placed in the front end of the draft pan and directed toward the rear in such a manner that the draft is forced to reverse the direction of the flame before it passes to the flues. The furnace is open, the brick work kept low and the maximum of heating surface is exposed.

called to the necessity for careful supervision of all locomotive equipment and care not to abuse the privilege of having oil burner power to handle your trains by overloading at the ultimate expense of fireboxes and flues. Emphasis should be placed on the fact that the oil fireman is a large factor in the success of the operation of oil burning locomotives. He must intelligently follow every movement of the engineer that demands regulation of the fire.

DISCUSSION

Several members spoke in favor of the use of the brick arch for oil-burning locomotives, as with this device the flame is more equally distributed throughout the firebox and the boiler maintenance is reduced. There is a tendency on account of the ease of operation of the oil-burning engines to neglect their maintenance. This should be carefully watched, as it will not only give a poor performance in oil consumption, but cost more for repairs than if the engines were

properly maintained between the general shoppings. H. T. Bentley, of the Chicago & North Western, stated that the cost of repairs to their oil-burning engines was not more than that to the coal burners. When the oil burners get in bad condition it has been found possible to get more life out of the boiler and out of the engine between shoppings by changing them over to coal burners. The success of the oil burner depends on the fireman and he should be properly educated and supervised.

STORAGE OF COAL

In order that the question might be thoroughly covered and local conditions taken into consideration, the mining districts of the country have been grouped in various sub-divisions, and sub-committees of representatives of railroads and coal operators were appointed for each group.

It has become apparent to all parties interested that there are approximately 50 per cent more coal mining operations in this country than are needed to produce the amount of coal consumed. This surplus of mines represents an investment of approximately \$450,000,000. If 25 per cent of this had been invested in storage facilities instead of mines the needs of the country could have been fully and promptly supplied, and the bituminous coal industry of today would be on a solid basis financially instead of the jeopardized state, which, we are told by the operators, actually exists, due to ruinous competition and high cost of production brought about by short running time.

In order to meet the spasmodic strong demands for coal in the fall and winter (further intensified by the biennial mine suspensions) the railroads have been gradually creating a large surplus of coal cars. The average surplus for the period of May 15 to July 15, 1914, was 95,564 cars. This represents an investment of approximately \$105,120,400. Fifty per cent of this amount judiciously expended in storage facilities would have accomplished as much in taking care of the coal traffic of the country, and the life of such storage facilities would have been double the life of the cars, with a very much less maintenance cost.

The reports of the sub-committees follow:

EASTERN GROUP

Ohio, Pennsylvania and West Virginia.—If coal is to move from storage near the mines by water, it should be stored during the fall and winter months and moved during the spring and summer. If coal is to be moved by rail, it is the consensus of opinion that it should be stored near the mines during late fall when traffic is heavy and winter when transportation costs are high, and moved to point of consumption during the spring and summer months. The consensus of opinion in regard to the coals named in the region under consideration, which may be screened without excessive breakage, seems to be that the coal best adapted for storage is the $\frac{3}{4}$ in. to $1\frac{1}{4}$ in. lump. In the case of very friable coals such a separation of sizes is not practicable, for which reason they should be stored as run-of-mine and the storage piles so made as to minimize the danger attendant upon storing the coal of mixed sizes.

While in the district in question attempts have been made to store coal, there was found to be considerable variation in figures representing cost of storage. It is felt, however, under conditions which are reasonably favorable, the cost of storage should not exceed 35 cents a ton, and under quite favorable conditions, the cost should be less.

This report included reports from the storage of various coals. The report is signed by: W. H. Averill, B. & O., chairman, sub-committee.

SOUTHEASTERN COAST GROUP

The consensus of opinion of both railroad executives and of at least one coal operator in the district, is that it is both desirable and feasible to store coal. From the railroad's stand-

point, it is agreed that lump coal of a firm quality, in order to resist powdering, is the best. The Central of Georgia has been very successful in storing slack with a large per cent of nut. From the operators' viewpoint, run-of-mine should be stored, as it leaves nothing on their hands.

All the roads in this district have storage centers and store coal regularly each summer. One coal operator has a storage plant in North Carolina with a capacity of 150,000 tons. The cost of operating this storage plant for two different periods is shown below:

UNLOADING COST, JUNE 24 TO OCTOBER 4, 1912:

		No. of tons	Cost per ton
Pay roll	\$2,148.74		.0172
Repairs to plant, supplies, etc.....	373.14		.0029
Fuel for crane	594.50		.0047
Total	\$3,116.38	125,696	.0248
Depreciation at 10 per cent per annum on \$71,000 for 6 months.....	\$3,550.00		.0283
Interest at 5 per cent for 6 months.....	1,775.00		.0141
Total	\$5,325.00		.0671
	\$8,441.38		

RELOADING COST, OCTOBER 8 TO JANUARY 31, 1913:

		No. of tons	Cost per ton
Pay roll	\$1,797.62		.0138
Repairs to plant, supplies, etc.....	727.44		.0056
Fuel for crane	646.70		.0050
Total	\$3,171.76	129,778	.0244
Depreciation at 10 per cent per annum on \$71,000 for 6 months	3,550.00		.0274
Interest at 5 per cent per annum on \$71,000 for 6 months	1,775.00		.0137
Total	\$5,325.00		.0655
	\$8,496.76		

Total average cost for dumping and reloading, 13.26 cents per ton.

UNLOADING COST, FROM MAY 1 TO AUGUST 31, 1914, INCLUSIVE, 2,703 CARS:

		No. of tons	Cost in cents per ton
Pay rolls	\$1,653.74	131,949	.0125
Repairs to plant, supplies, etc.....	576.72		.0044
Fuel for crane, estimated at $2\frac{1}{2}$ tons per day..	600.00		.0045
Total	\$2,830.46		.0214
Depreciation at 10 per cent per annum on \$71,000 for 6 months.....	\$3,550.00		.0269
Interest at 5 per cent per annum on \$71,000 for 6 months	1,775.00		.0135
Total	\$8,155.46	131,949	.0618

One road in this district has a Dodge plant which consists of a 20 ft. by 40 ft. pit, 15 ft. deep, into which the coal is dumped from hopper bottom cars. Encircling this pit is a track for a traveling crane which takes the coal from the pit and stores it in a circular pile around the pit. The same crane is used for coaling engines by placing the coal in an overhead bin from which it is loaded on tenders. This device is both successful and economical.

The report is signed by: A. P. Wells (C. of G.), chairman, sub-committee.

SOUTHWESTERN GROUP

It is the consensus of opinion of executives of railroad and mining companies that Mr. Hall's reasons for, and the desirability and advantages of, storing coal (which were reported at the 1914 convention) are correct. It is generally agreed that lump and nut coal with at least 25 per cent of slack removed is the best kind to store, that is, with the coals which will store without great danger of spontaneous combustion.

All who have tried to store Texas and part of the Arkansas coal have found that it is a failure on account of the liability to spontaneous combustion. All other coals in the second territory—Oklahoma, Kansas, Missouri, and Northern Arkansas—can be stored and the loss in heating value and weight will be from 2 per cent to 8 per cent.

The greatest danger from spontaneous combustion is caused when the coal is stored in the open during the hottest months of the year—July and August. If the coals in this territory were stored in May, June, September, and part of October, the

danger of firing would be greatly reduced, and practically all conditions make this possible. It is the opinion of practically all men in this territory that it is better to store coal at the railroads' larger coaling stations, as the facilities at these coaling stations are sufficient to handle larger amounts of storage coal. Usually there are enough laborers employed around coaling stations who could be used in storing coal part of the time in addition to their other duties.

The cost of handling storage coal varies greatly. The best figures obtainable are as follows:

Tons coal handled, 84,378.

		Average per ton
Cost to unload	\$3,576.59	\$0.0424
Cost to reload	2,320.15	.0275
Miscellaneous and tracks	2,663.22	.0315
Total cost	\$8,559.96	\$0.1014

Another system reports that the total cost to unload by—

Clam shell	5 cents per ton
By hand	7½ cents per ton
Reload—Clam shell	5 cents per ton
Reload—By hand	7½ cents per ton

Total average unloading and reloading, including supplies and walls, where necessary, by—

Clam shell	10 cents per ton
By hand	15 cents per ton

Other figures vary from 15 cents to 30 cents per ton for total cost of handling storage coal.

Some roads have mixed fresh coal with coal that has been in storage for several months and have had good results, while some other roads have used a little crude oil with storage coal by throwing several bucketfuls over the coal when it is put on the tender, both methods producing results practically as good as obtained from coal just from the mines.

Some say that their observations have been that the loss in heating value of storage coal (Arkansas and Louisiana) is usually less than 5 per cent. One company's analysis showed a loss in B. t. u. of about 25 per cent on account of so much spontaneous combustion and slacking. This is an exceptional case, but it is likely to be the rule with Texas and some of the Arkansas coal.

The report is signed by: J. B. Hutchinson (Sun. Cent.), chairman, sub-committee.

NORTH CENTRAL GROUP

Indiana, Illinois and Iowa.—The territory supplied by the mines of Illinois, Indiana and Iowa is gradually developing industrial plants which require ever-increasing quantities of screenings for their power plants. The increased production of lump coal in the winter months creates a surplus of screenings, which are sold as low as 10 cents a ton at the mines during the period of demand for domestic coals. In the summer months when the lump coal production has reached its minimum, the same screenings command a price of \$1 at the mines. To equalize these two extremes would be a well-nigh ideal condition.

There is no question but that the storage of coal is feasible, when conditions make it desirable. Coal should be stored at ultimate destination during months April to August to be of greatest advantage to producer and carrier. In support of this statement data has been procured showing the relative consumption of the railroads procuring their supply from this district for periods April to July and October to January respectively, and reports from 24 roads (using conservatively 95 per cent of the railroad fuel coal supplied from this district) show:

April-July	8,118,400 tons
October-January	15,075,650 tons
Increase in fall and winter months	6,957,250 tons or 85.7 per cent

Lump and egg coal should be stored at destination by railroads, industrial plants and domestic users during months April to August. Screenings should be stored at mines by coal operators during period September to January.

The only storage undertaken by railroads has been previous to strikes or suspension of work at mines. Figures submitted

by one railroad covering coal stored in fall and winter 1913-14 and recovered in spring 1914 show:

	Tons	Total cost labor and supplies	Average cost per ton
Unloaded	54,227	\$6,507.24	.12
Reloaded	53,763	3,006.36	.055
Loss	464	\$9,513.60	.176

Note.—Locomotive crane and grab buckets were used for handling both ways. The higher cost of unloading is due to charging the cost of temporary tracks to unloading expense.

Following are figures submitted by another railroad covering coal stored in year 1910:

Location of pile How stored	C Semi-permanent trestle, drop bottom cars, clam shell used to widen pile	B Drop bottom cars and track jacked up
Tons unloaded	132,314	31,576
Cost of Unloading—Total		
Labor Charges	\$19,922.09	\$3,946.45
Switching, etc.	2,082.50	673.71
Total	\$22,004.59	\$4,620.16
Tons reloaded	107,096	31,576
Cost of Reloading—Total	\$ 8,818.21	\$2,516.95
Cost of Unloading—Per Ton		
Labor charges	\$.150	\$.125
Switching, etc. ....	.016	.021
Total	\$.166	\$.146
Cost of Reloading—per ton .....	.082	.080
Cost of Unloading and Reloading	\$.248	\$.226

In storing pile C, tracks were placed at each side of the main pile and a clam shell operating on these tracks took the coal from the main pile after it had been dumped from the cars and transferred it to an auxiliary pile parallel to the main pile and thus leaving the clam shell operating on tracks between the main and auxiliary piles. It is evident that this additional handling, ran up the cost considerably, and if interest and depreciation on investment of trestle were included in the table it would seemingly prove to be an uneconomical method.

Pile B is just the ordinary storage pile where drop bottom cars are used and track jacked up on the coal.

The following information was furnished by one railroad showing laboratory tests of samples taken in October, 1911, from a storage pile containing 5,651 tons, the most of which was stored in the fall of 1907, the remainder in the previous year. The average results of these analyses are shown in the table in comparison with those of samples taken at the mine in July and August, 1909, and during August, 1911.

	Loss of moisture on air drying Per cent	Moist- ure Per cent	Proximate analysis			B. t. u. determinations and sulphur:	
			Vola- tile matter Per cent	Fixed carbon Per cent	Ash Per cent	Sulphur Per cent	B.t.u. Per cent
Average of surface samples.	5.9	9.93	34.14	34.75	21.18	4.60	8,953
Average of samples taken 18 in. below surface	6.0	10.93	36.18	34.06	18.83	4.08	9,390
Average of samples taken 4 to 8 ft. below surface	4.3	9.37	40.78	35.10	14.75	4.82	10,296
Average of 6 days' samples of engine lump, July and August, 1909 .....	...	8.08	37.66	37.01	17.25	....	10,298
Average of 5 days' samples of engine lump, August, 1911 .....	...	10.15	38.95	35.13	15.77	5.10	10,705

This was Wyoming lump coal prepared over shaker screens and finally over a revolving wire screen having openings which average 17/64 in. square. Therefore this is what would be termed "Lump Coal," though of course it is a very low grade of lump. In the preparation of this lump they make approximately 10 per cent slack. No precautions were taken in storing this coal and it was stored by dumping the cars and then jacking up the track and again dumping the cars. After the pile was completed the track was taken up and the pile was not even peaked on top as it should have been. There was therefore a flat space about 15 ft. wide, and the depth of this pile was about 18 or 20 ft.

The report is signed by Carl Scholz (Rock Island Coal Mining Company), chairman, sub-committee.

NORTHWESTERN TERRITORY GROUP

In Canada, due to the long and severe winters, the open car will never become popular; it is a box car country. Relative to this probability is the reduced usefulness of the locomotive crane and clam shell for purposes of loading and reloading. Again, the same cause puts the ban upon the "submerging method" of storing for this country. These considerations limit and localize the problem for us.

Coal should rest on a dry base, moisture from below being conducive to spontaneous combustion. Provide as much ventilation as possible and distribute the weight of the coal as much as possible. Combustion nearly always takes place within 90 days after storing. The storage plants should be wherever coaling stations are. Extra capacity or storage should have been an accompaniment of every coal-chute built. Even if not financially able at the time, space should be allotted for them, until such time as they could afford to build them. This eliminates the second handling, its enormous expense and blockade of traffic, reducing to a minimum the use of all equipment for our supplies

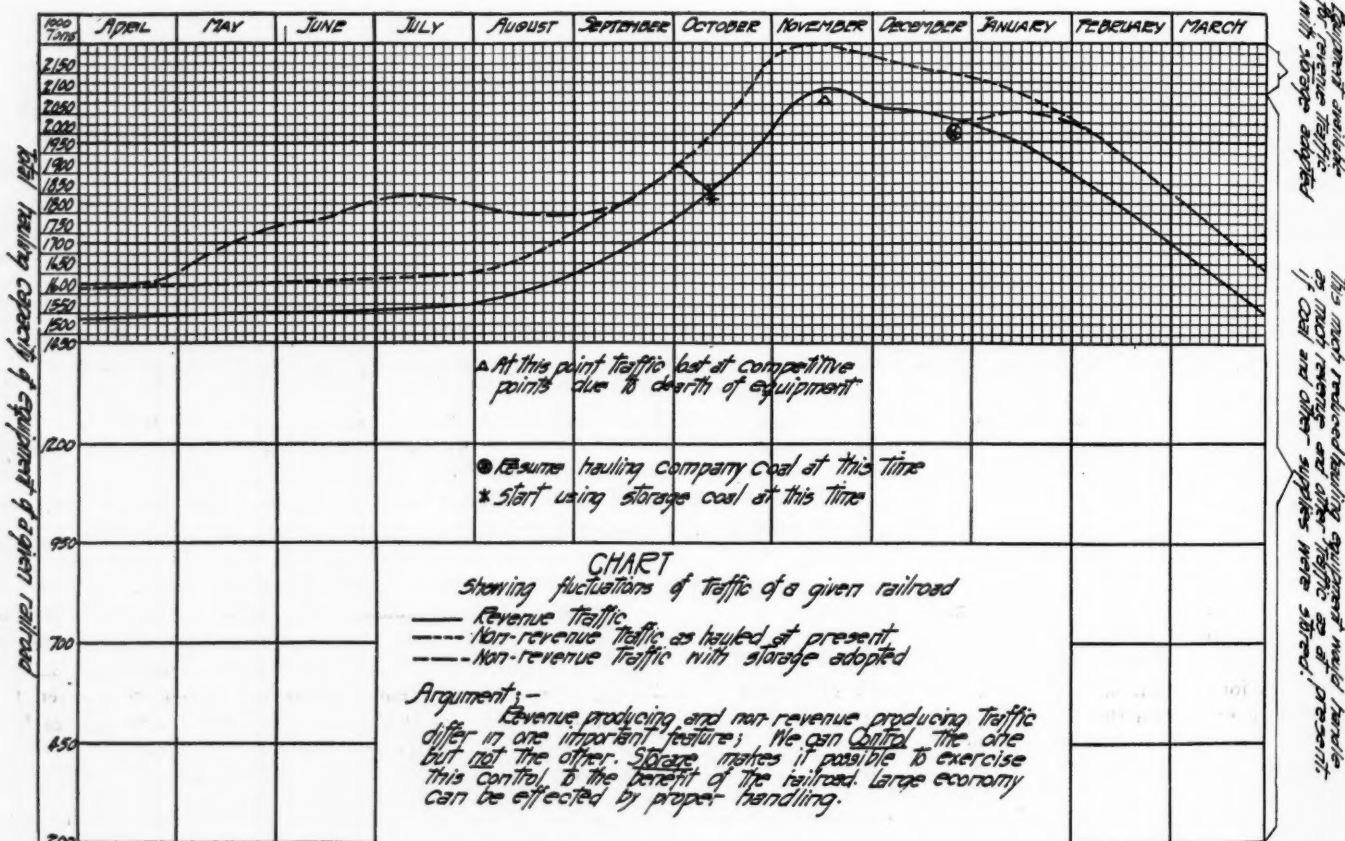
Mr. Hall's paper, that railroads incur higher expenditure in winter, in some cases as high as 31 per cent, implying the fact that the least possible of supplies should be hauled at this season also.

Again a great saving could be effected by eliminating the unnecessary delay to cars under the present system. A considerable number of cars are always held under coal. The storage plants would accommodate this surplus coal, with the result, that very many less cars would be engaged to do the same work. Once more, coal should be stored to protect long stretches of road not served with coal mines, at times of accidents, when supply would be cut off by wrecks, washouts, snow drifts, destruction of bridges or land slides.

The report is signed by: A. H. Davies (G. T. P.), chairman, sub-committee.

DISCUSSION

The storage of coal will not only assist the coal operators, which the railroads should be very willing to do, but also is of advantage to those roads which find it necessary to haul the coal long distances, or find it difficult to procure coal



and thereby provides the maximum of "right of way," in the shape of clear tracks and haulage equipment for revenue producing traffic.

To the railroads the practice of storing offers great benefits, well organized as they are. It opens up possibilities of economy and better organization that are surprising, in face of the apathy, almost antagonism, with which the idea of storing supplies has been received by the people concerned. Assuming for illustration that 15 per cent of our total hauling capacity is being utilized to haul our own supplies, at our busiest season, it is then evident that by hauling and storing at other times we could do without 15 per cent of our present equipment, and still haul the same amount of traffic.

With a view of demonstrating this phase further, through the courtesy of our secretary, the accompanying chart was obtained, that shows those different considerations at a glance. Lines denoting both kinds of traffic are in true proportion. A line is also drawn suggesting how supplies with a system of storage in vogue should be hauled, not forgetting the fact mentioned in

exactly when they want it. By the storage of coal at the proper time the coal carrying equipment will not only be released for carrying revenue coal at the rush periods, but also there will be much less equipment necessary to handle the business. From the fuel department standpoint the storage of coal is desirable, as it protects against strikes at the mines, train wrecks, interruption of traffic, etc. Where possible, the storage piles should be adjacent to the coal chutes in order to prevent rehandling, although in some cases it may be found practicable to store at some central point. Care should be taken to examine the coal piles periodically to prevent spontaneous combustion.

In the storage of coal a concrete floor will be found desirable, and care should be taken that there are no pockets in this floor for the accumulation of moisture. The height of the storage piles will vary according to the characteristics of the coal and the storage ground upon which it is placed. Many instances were mentioned where coal had been stored for 2 to 10 years with no trouble from spontaneous com-

bustion, while new coal would take fire quite readily. When coal is to be stored it should be carefully prepared at the time and not contain an unnecessary amount of impurities.

FRONT ENDS, GRATES AND ASH PANS

The committee on this subject sent out letters of inquiry to various railroads requesting information concerning the front end, grate and ash pan arrangements.

Front Ends.—The drafting of locomotives has always been considered a function of the front end alone, but speaking broadly, this is not correct. Drafting may be defined as the controlling factor in the combustion of the fuel, and rightly starts at the air openings in the ash pan. With these fixed the grate next governs, and then the firebox volume, tube area and length, the brick arch, etc. If these parts are properly adjusted it is not believed that any very delicate adjustment will be needed in the smokebox. There is nothing mysterious about the action of the exhaust jet to induce draft, and if all other factors receive their just due, it is not believed that we would have engines of the same class varying $\frac{1}{2}$ in. in the diameters of their nozzles, with their diaphragms clear down or clear up, etc.

Grates.—From a study of the information received regarding the grates it is found that the percentage of air openings of 62 bituminous grates varies between a minimum of 25.8 per cent in one design of interlocking finger grate to a maximum of 49.6 in a design of the herring-bone type, the average of all cases giving a percentage of 37.2 per cent. The degree of coarseness of the grates has been expressed in terms of the maximum dimensions of any air openings. This figure will vary between the limits of $\frac{1}{2}$ in. and $1\frac{1}{2}$ in. The 1 in. dimension of air opening is found to be that most generally used. The nature of the coal and the degree of tendency to form a clinkery ash will naturally govern the design in reference to the width of grate bars or length of the fingers.

Anthracite Grates.—The percentage of air opening for the anthracite grates varies between 32 per cent and 46.9 per cent, the average being 39.4 per cent. The coarseness of the grate in these cases, as represented by a maximum air opening, is $\frac{3}{4}$ in. and $\frac{1}{2}$ in.

Ash Pans.—From the information received on ash pans it is evident that there is a very great difference of opinion. The highest percentage of air opening in comparison to grate area for bituminous coal is 15.1 per cent, while the least is 5.78 per cent. With the tube area taken as a basis of comparison the maximum is 127.1 per cent and the minimum 50.8 per cent. The average ash pan air opening for all bituminous burning engines is 11.08 per cent as compared to the grate area and 82.1 per cent as compared to the tube opening. Previous investigations have shown that the air openings should total not less than 14 per cent of the grate area for best all around results. It would seem that the ash pan air opening should be not less than 110 per cent, instead of 75 per cent of the flue openings.

The ash pan volume should be made as large as possible; with modern power it can hardly be made too large. Delays en route might often be obviated if the necessity for dumping the pans could be obviated. On very large power with trailing wheels the use of the six hopper style of pans will often very materially increase the capacity over what might otherwise be obtained. A proper guard against the throwing of fire from the ash pan air openings must be provided. The report is signed by M. C. M. Hatch (D. L. & W.), chairman.

Discussion.—A. G. Kinyon, of the Seaboard Air Line, spoke strongly in favor of the table grate, as it provides a much greater air opening and will better distribute the air through the fire. Some success has been obtained by the use of the double-exhaust, the Delaware, Lackawanna & Western having made it standard on all anthracite burning locomotives

and is now trying it out on the bituminous coal engines. The variable nozzle has been tried with but little success.

OTHER BUSINESS

The committees on Fuel Tests and Fuel Accounting submitted reports of progress. Arrangements have been made with the University of Illinois to conduct tests on various classes of fuel, as soon as the necessary contributions can be obtained for conducting the work. The committee on Fuel Accounting reported that it is to seek to reduce the number of forms in order to eliminate the clerical expense of this work. A paper on the Waste of Fuel in Railway Stationary Plants and Locomotives by Jos. W. Hays, of G. L. Simonds & Company, Chicago, was presented by F. A. Moreland, who also showed, by lantern slides, the common defects found in stationary boiler plants. From the statements by the author of the paper and others during the discussion it is apparent that the railways do not give the stationary plants the attention they deserve. Large sums of money can be lost if the plants are not maintained in proper condition.

The following officers were elected for the ensuing year: President, D. C. Buell, Union Pacific; vice-presidents, John G. Crawford, Chicago, Burlington & Quincy; E. W. Pratt, Chicago & North Western; W. H. Averill, Baltimore & Ohio; executive committee, W. C. Hayes, Erie Railroad; H. T. Brown, Illinois Central; M. C. M. Hatch, Delaware, Lackawanna & Western; A. G. Kinyon, Seaboard Air Line, and T. J. Lowe, Canadian Northern. Chicago was chosen as the next place of meeting.

The secretary-treasurer reported a total membership of 680 and a cash balance of \$826.62; 316 members registered during the convention.

PROPOSED REVISION OF ACCIDENT RECORDS

William J. Meyers, statistician of the Interstate Commerce Commission, has sent out a series of new blanks for reporting accidents monthly to the commission, together with a further revision of the code of rules governing the preparation of the reports, modifying the proposals submitted by him last January and reported in the *Railway Age Gazette* of January 22, page 164. Since January, conferences have been held with railroad officers, and in particular with the committee of the American Railway Association, Messrs. Julius Kruttschnitt, W. W. Atterbury and W. G. Besler. The number of forms of blanks to be used for the different features is reduced from seven to four, and the principal blank, Form T, conforms pretty nearly to the suggestions made by the Kruttschnitt committee.

The proposed requirement for individual reports of non-train accidents—hitherto called industrial accidents—has been withdrawn, and the commission will require for these only a summary statement, as at present. The requirement of detailed reports of accidents to locomotives is retained, as is the blank calling for reports of the death of persons who have been previously reported as suffering non-fatal injury. A special blank has been added on which to report failures of rails whenever such a failure results in a train accident. The rule requiring reports of injuries to employees which disable them for less than three days is withdrawn. The comparison of accidents with train mileage is not to be asked for, but the blanks retain the forms for comparing the number of injuries to employees in non-train accidents with the number of hours worked by the men of those classes to which the injured men belong, five classes in all, the ratio to be shown for each class separately.

Those injuries, fatal and non-fatal, to persons on or around trains, where there is no train accident, which now are included in class C, are to be called "train-service accidents," and reported according to regulations much like those now in force, but in a great deal more detail. The date when the new regulations are to go into effect is left blank. It is desired that criticisms be received in Washington by June 1.

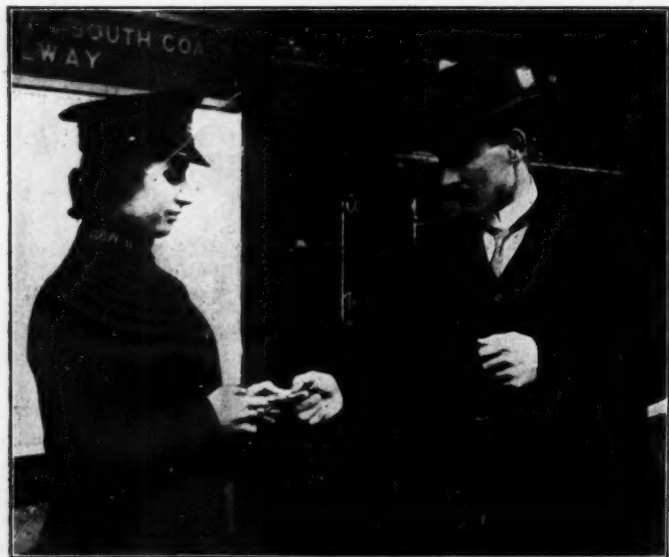
WOMEN RAILWAY EMPLOYEES IN ENGLAND

The employment of women on railway work in Great Britain is extending apace. The underlying idea is that by getting women to fill the places of men, more and more recruits may enter the army and maintain the requisite supply of soldiers. Even in time of peace the number of female railway employees in Great Britain amounted in the aggregate



Women Ticket Collectors at Paddington, Great Western Railway

to a fairly large figure, although it was mainly in the clerical, accounting and refreshment departments that scope was found for their services. A certain number of women were also employed on Scottish railways as car cleaners before the war. On the European continent the employment of women



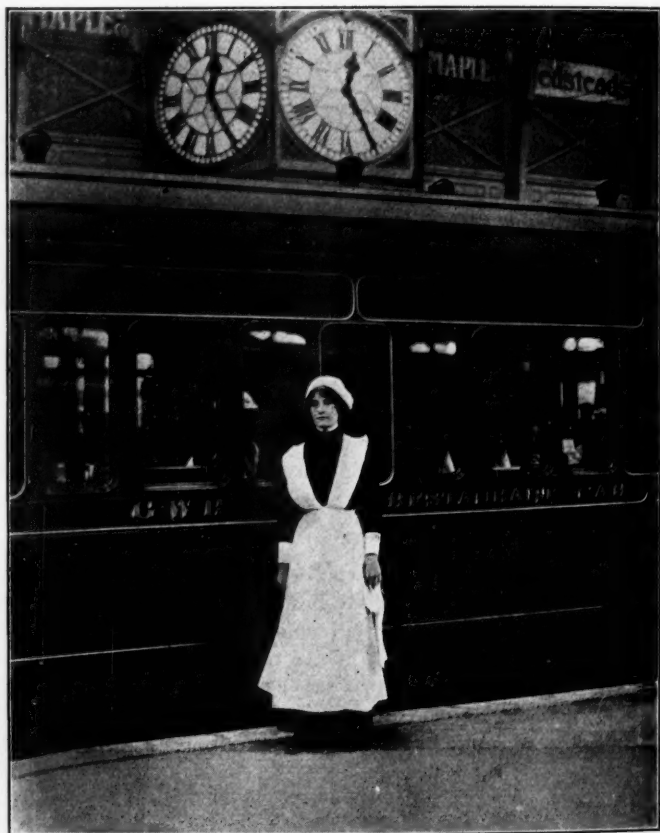
Woman Ticket Collector on the London, Brighton & South Coast Railway

on railways has always been much more common than in Great Britain, women frequently acting as booking-clerks at stations and as gate keepers at grade crossings, while female station masters were by no means unknown.

The extension of the employment of women on British

railways began with taking over an increasing number of women as clerks and for cleaning purposes.

The London & North Western introduced women clerks at Willesden Junction, about the end of March. At about the same time the Great Central tried the experiment of employing women as platform porters at Marylebone, its London terminal station. These women were selected from the car cleaners whom the company had already been employing with success. Their work is confined to platform duties. Obviously, women could not be expected to perform the more hazardous duties associated with a porter's occupation, such as switching, coupling and uncoupling cars and the like. Women ticket collectors were first introduced on the Great Western. One of the illustrations shows them at work at Paddington station. It will be noticed that the women collectors wear no distinctive uniform beyond a badge on the arm. The London, Brighton & South Coast, on the other hand, is putting its women ticket collectors into smart uniforms, one of which is illustrated herewith. Early in May female ticket collectors began their duties at Euston station



Restaurant Car Waitress, Great Western Railway

on the London & North Western, and that company is also engaging girls in the offices of the locomotive works at Crewe.

Owing to the large number of their employees who have joined the army, the three principal Scottish railway companies (Caledonian, Glasgow & South Western and North British) have also had under consideration the question of increasing the female staffs in their employment. They are already employing a number of women car cleaners. The proposed increase will affect mainly the various clerical departments, but it will also apply to booking clerks, parcel clerks, ticket collectors and telegraph operators.

TURKS BUILDING NEW RAILWAYS.—It is reported that the Turks are actively pushing forward the construction of a railway between Zonguldak and Ismidt, an important line, as Ismidt is not far from Skutari, with which it is connected by rail.

How the Operation of One Terminal Was Improved

Continued Serious Congestion Overcome By Change in Organization, Better Methods and Improved Discipline

By G. D. BROOKE

Division Superintendent, Baltimore & Ohio, Chillicothe, Ohio

The enormous growth of our cities during the past half century has out-stripped the development of railway facilities within their ever widening limits. Property adjacent to the tracks has been in great demand for industrial sites, and has so increased in value as to render its use for railway purposes generally impracticable under present financial conditions. Moreover, even when suitable property is available, terminal improvements are extremely expensive and it is a difficult matter to justify their cost as an investment. Therefore, for the immediate future at least, the increased demands on terminal facilities will have to be met by more efficient operation of the existing plant.

Fifty years ago a railway extended its line to a certain middle-west city and established a terminal in the center of its commercial district. This terminal consisted of a small yard, a freight house and team tracks and an engine house and machine shop. These facilities, with a passenger station reached by a spur from the main line, were ample for the business then offered and apparently would be for a long time. With the advent of the railway, however, the city began a new industrial development, and the yard and narrow right of way forming the approach to it were walled in by warehouses, factories and industrial plants. To accommodate its facilities to the increasing business, the railway secured a site for another and somewhat larger yard on the outskirts of the city, where the topographic conditions were favorable. This in turn was surrounded by the expanding industrial district and a third yard further out and equal in capacity to the other two, was built on suitable ground and reached by a three-mile spur.

The absorption of another road and the construction of a connecting belt line established a through route, and, incidentally, added two other yards on the opposite side of the city. Five other railways have entered the city, and it is now one of the important gateways. The interchange, both of through business and of local cars for delivery within the switching district, is very heavy.

Meanwhile the industrial development has continued. Along the main tracks, industries have been established and provided with side tracks, many of which are inadequate for the requirements of the plants they serve. On the belt line a blast furnace and two steel mills have been established, also several fertilizer factories, brick yards and a number of smaller industries. In the early days a track was laid along an important street of the wholesale section for a distance of two miles, and a freight house and teaming yard established to serve an important district. A number of spurs lead off this track into warehouses and factories. There are altogether four freight houses and seven teaming yards in the city besides a fruit and produce shed and a team yard recently constructed to develop the wholesale fruit and produce traffic.

Twenty years ago the passenger terminal was rebuilt to accommodate the business of the home road, and to take in that of three foreign lines. It has been crowded for a number of years, and being of the stub-end type, the approach is badly congested during certain periods of the day.

Early in the last decade the main lines were double-tracked and equipped with automatic signals, and the junctions of the branch lines and of several foreign roads interlocked. Three crossings of foreign lines, however, near the throats of yards are operated by crossing watchmen with two-

position crossing signals. A number of street crossings at grade have been eliminated, but a great many remain which are protected by watchmen and gates, and speed restrictions are numerous. The heavy increase in business which required these improvements made necessary also the remodeling and enlarging of two of the yards, one on either side of the city, where engine terminals were provided and which constitute the road terminals of the two adjoining divisions.

This terminal presents the most intense problem in operation of the entire system of 5,000 miles. Here is found the combination of a dense road movement, heavy classification work and industrial switching in congested districts. The only successful solution of such a problem is organization.

During the latter part of 1912 the terminal became congested; the heavy business taxed the facilities and the movement of through traffic became very slow; road trains were held out of the yards; there was a serious accumulation of bad order cars; delays to passenger trains and scheduled freights were frequent, and shippers complained bitterly of delays to cars and of poor switching service. These conditions were aggravated by similar congestion in the terminals of other roads entering the city. The situation was serious and the need of a strong directing head was apparent. The position of superintendent of terminals was created and filled by a man from the terminals of a foreign road in a distant city.

The new superintendent of terminals was an organizer. Prior to his appointment the terminal was operated by two general yardmasters reporting to the trainmaster of the division having jurisdiction over the terminal. Two weeks were spent in studying the facilities and the organization, and in becoming familiar with the movements to connections, the requirements of through business, and in a general way of the industries. Then was begun a series of changes in methods—and in a few instances, in men—which finally evolved the form of organization shown on the following page.

When any stranger enters an organization in a prominent capacity he is met with an instinctive undercurrent of mild antagonism. The organization braces itself to try the mettle of the newcomer. His every move is scrutinized to determine if the "old man" knows the game, and what his policy will be towards the older members of the organization. The new superintendent of terminals realized this, and knowing the value of "esprit de corps," called a staff meeting of the yardmasters, engine and car foremen, agents and clerks. His observation had convinced him that the personnel of the organization was generally good, and that the quickest results could be obtained from the material at hand. He therefore opened the meeting with a statement of reassurance, expressing confidence in the loyalty of each member of the staff and in their ability to contribute towards producing those results which were so obviously desirable. He then outlined his plan of campaign and explained briefly the reasons for each successive step to be undertaken. He emphasized the absolute necessity of each member of the staff supporting this plan in every detail, although he might hold an honest difference of opinion as to the method best suited to the case. In this way all latent prejudice and possible opposition were eliminated and a proper mental attitude towards the work in hand inculcated. Similar meetings were held frequently thereafter and were conducted so as

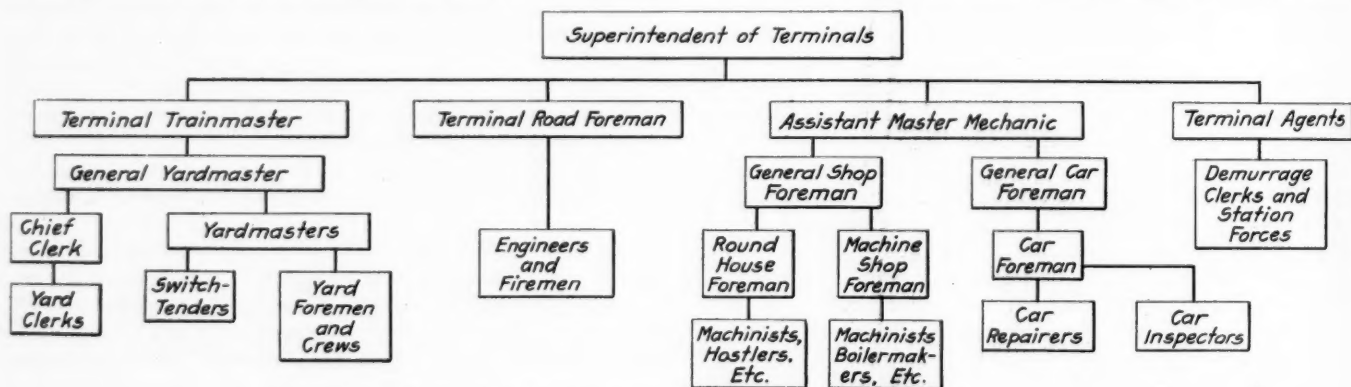
to elicit free discussion of each subject considered, to reach definite conclusions when there were differences of opinion, and to decide on a plan of action in every case. These plans were later issued in the form of written instructions to all interested parties to avoid all possibility of misunderstandings as to details. Besides accomplishing the immediate purpose in view, these meetings proved of great educational value, particularly to the less experienced yardmasters and clerks, and were very effective in promoting a feeling of joint responsibility and co-operation between the various departments or branches of the service.

The method of procedure consisted in selecting in succession the features of operation in the order of their importance; in studying each one thoroughly and broadly, having in mind its bearing on all the other problems; in determining on a definite course of action and putting it into effect, and in specializing on it until it became self-effective, or, as it were, automatic. Thereafter it required only periodic checking and such variations as might be required to meet changing conditions.

The first active undertaking was to reduce the number of cars in the working yards in the terminal. A comprehensive check indicated that in order to switch economically, a reduction of 40 per cent in the number of cars in the yard was necessary. Authority was obtained to destroy 200 bad order cars of old type and light capacity; a like number of empties were sent to the heavy repair shop at the terminal

upon. Some duplicate checking was eliminated by assigning the checking of working yard tracks, interchange tracks and certain industrial tracks in the immediate vicinity of the yards to the yard clerks and the freight house and team tracks and usually the industrial tracks to freight clerks reporting to the several agents. These checks were completed by 7:30 a. m., and each yard and district reported to the car distributor by telephone. By the use of a special form the report for the entire terminal was quickly compiled and contained comprehensive information as to the location and character of movable loads, and the number and class of empty cars available for loading or movement. This report showed the situation in the terminal at a glance, and made it practicable to take steps to relieve promptly any tendencies towards local congestion, and to anticipate the needs of road power for the ensuing 24 hours. It also enabled the car distributor to dispose of the available empty equipment to the best advantage.

The movements between the several yards in the terminals, to foreign line interchange tracks and to certain of the outlying industrial districts required the use of a number of engines in drag or transfer service. These engines were being operated without any definite schedules or predetermined plan. Whenever a cut of cars was ready to move from any yard, the yard master would assign the first transfer engine available to handle it to its destination; if any cars were ready to be returned to the yard from which the engine started it would



Form of Yard Organization at One Important Terminal

of another division; it was arranged to increase the switching at the yards at the ends of the engine districts on each side of the terminal, and to make up the trains so that through business would not be delayed in the terminal yards, back haul would be avoided on business for connections and local delivery, and cars for each district of the terminal moved promptly from the yard where received; and by a campaign with the shippers an accumulation of unconsign loads was gradually reduced and more prompt loading and unloading secured. Some additional road power was placed in service on the adjacent divisions, and it was arranged to store empty box cars held to protect loading in some unused sidings outside the terminal. These measures produced the anticipated results, and in three weeks the number of cars was materially reduced.

The next step was to establish a central car record office. The car record clerks from the offices of the general yard masters were transferred to the office of the superintendent of terminals and placed under the car distributor. Conductors' wheel reports of trains into and out of the terminals and the switch lists of yard foremen doing transfer, industrial, team track and freight house work reached this office promptly. This enabled the index work to be kept up to date and made an accurate location of all cars entering, leaving or moving within the terminal available at all times within reasonable limits. A daily report of the movable cars within the terminal from actual check of all tracks was determined

take them; frequently it returned light and later there would be a light movement in the opposite direction. A meeting of the terminal superintendents of the several lines was called for the purpose of fixing definite hours for receiving and delivering cars at interchange tracks. This being accomplished, a schedule was worked out for the movements of each engine in transfer service, due regard being had for passenger and other scheduled trains. The several yards were required to have the cuts made up for the engines at stated hours and the transfer engines moved promptly on schedule. In working out the schedule it became apparent that more engines were in this service than were necessary, and in a short time three crews were taken off.

This scheduling of the movement of transfer engines brought the organization to a stage where it was practicable to cope successfully with the most important problem of starting passenger and scheduled freight trains on time, and running them on time within the limits of the terminal. The usual staff meeting was held to launch this campaign, the station master and his assistants, as well as representatives of the express companies and the superintendents of terminals of the foreign lines using the passenger station, being in attendance. The importance of starting scheduled trains on time and running them on time was dwelt upon at length, and the value to other movements of accomplishing this duly emphasized. It was pointed out that the conditions were very bad, and that success could be achieved only by

long and continuous effort. Above all things the train must start on time. Then proper respect for passenger trains must be installed into signalmen, switch-tenders, yardmen and men in freight service. Delays from various sources were to be expected, but one by one they would be eliminated and the men educated to the required standard. It was found advisable to appoint a yardmaster in charge of the coachyard and train shed, reporting to the station master and having full authority over all movements of passenger equipment into the station. The handling of express transferred from connections on close time was a serious difficulty, but was finally overcome by increasing the force and quickening the work. A yard foreman had to be dismissed before the practice of yard engines occupying main tracks and stopping passenger trains was broken up. In six weeks a decided improvement could be observed, and after six months of persistent endeavor the trains were moving with marked regularity, and the beneficial effect on the entire terminal was obvious.

The scheduling of the transfer engines and the efforts to run scheduled trains on time developed a weakness in the method of handling train movements within the terminal. Movements of yard engines and extra freights were handled principally by the signalmen and switch-tenders by telephone communication with adjacent offices and the yards. This resulted in frequent interference of movements; often with heavy delays. To systematize the handling of trains a three-trick dispatcher's office was inaugurated at the terminal headquarters. A telephone dispatching circuit was provided with connections at all interchange and heavy industrial points; telephone connection with all the yard and freight offices was also available by commercial service with a private exchange. This central control of all movements proved of great value. Yard engines could be given advantage of delays to passenger trains in making main track movements and still be kept out of the way of these trains; yardmasters could locate quickly any transfer or industrial switch engine with which they desired to communicate; all working at cross-purposes and misunderstandings were avoided and the movements made to the best advantage, having in view the general situation instead of the local one as formerly.

The switching of freight houses and team tracks was done by engines from the yards to which they were most conveniently located, and the general method was good. Definite work had been assigned to each engine to be done on an approximate schedule. The cars for placing were switched in order in one cut by the crews in the working yard; these were moved to the freight house and team yard by the engine assigned to that work and spotted after the outbound cars had been moved. The switching of merchandise and quick-dispatch cars required particular attention.

At a certain freight house the receipt of freight stopped at 5 p. m.; at 5:45 p. m. the cars were sealed and the night engine was standing on the lead ready to move the cars for points beyond the adjoining divisions. These cars were taken rapidly to the working yard and switched into eight classifications, five for the east and three for the west. In the meantime another engine had pulled the team tracks and was soon on the scene with the quick-dispatch loads, which it classified in turn while the first engine returned to the freight house to resume work there, taking with it a cut of cars from industries which had been collected by a day engine. It assisted in completing the classification and in switching the cars into one cut, with which it proceeded in turn to the east and west road terminal yards where the quick-dispatch trains were being made up for movement at 10 p. m.

The reverse of this procedure occurred the following morning, when the Q. D. run from New York arrived in two sections between 5:30 and 6 a. m., in order to have all the

cars placed and ready for delivery when the freight house opened.

Success in handling the industrial switching was attained by determining just what service each plant was properly entitled to, and then planning the work of the engines so that this service could be performed with regularity. The smaller industries having a siding capacity of only a few cars presented no difficulties; a switch about the same hour each day was the rule, but it was thoroughly understood that no car should remain in the terminal longer than 36 hours before being placed.

The switching service at some of the larger industries had been the source of much adverse criticism and annoyance for months. The method in such cases was to make a call by appointment, on the manager of the plant and discuss fully the requirements of the industry and the practicability of giving the service desired. In a few instances it was readily shown that the siding capacity was inadequate and steps were taken to remedy this. A frank and thorough discussion of all questions involved always resulted finally in an understanding being reached as to the service to be performed, and in a short time a spirit of co-operation on the part of shippers was apparent. The character of the service having been determined upon in any given case, the work was assigned to a certain engine and followed for a few days by a yardmaster to insure the start being made right. Afterwards the work was checked periodically by observation and by inquiry of the manager of the plant, who was encouraged to report any poor service to the superintendents of terminals, and not to the traffic or general operating officers, as had been done formerly. By this means practically all complaints were remedied or adjusted locally, with much less delay and far greater satisfaction to all interested.

The proper movement and use of cars so as to provide empties for all loading offered required systematic and persistent checking. The agents were impressed with the importance of interesting shippers to load and unload cars promptly, and to place orders only for their actual needs. They were required to keep all demurrage records in such good shape that bills could be substantiated beyond question. Empty cars on industrial tracks not required for immediate use were moved out daily and used at other industries or stored in the working yard. The unloading of material for company use was systematized; a central storage site was selected adjoining a large heavy car repair yard, and a force was organized to unload the material there. The cars were placed regularly by the engine switching the repair yard, and the empties moved as soon as unloaded. The same force was used for transferring loads from bad-order cars for that section of the terminal, and a platform was built to facilitate this work.

While these changes in methods were gradually being evolved, the organization was being built up and strengthened. It was realized from the first that discipline was lax and the entire force disorganized. In going through the terminal, cars were found that had been broken up and others that had been shoved off the ends of stub tracks and not re-railed. Side collisions were not infrequent in the yards, and several accidents causing serious damage had been passed without investigations. These were the unmistakable indications that the men in the ranks did not have the proper respect for authority, and were not obeying the rules, and it was evident that this was applicable to the road crews running into the terminal as well as to the yard men. An undercurrent of dissatisfaction which occasionally amounted to antagonism was apparent, and was traceable to the policy of tardiness and unconcern in the settlement of minor grievances and the tendency to growl in considering doubtful wage cases.

A terminal train master was appointed for the distinct pur-

pose of promptly investigating all accidents and infractions of the rules. A man experienced in the administration of discipline was selected, and after he had become somewhat familiar with the physical conditions, he was assigned principally to office duty so as to be ready at all times during office hours to conduct investigations, employ new men and instruct and examine men on the rules. In case of accident he was also ready to proceed at once to the site and make a first-hand investigation on the ground. Notes taken in such instances often proved invaluable in fixing the responsibility ultimately.

In all investigations, and in fact in all dealings with the men, a quiet, dispassionate attitude was assumed, it being the intent to establish the impression that perfect fairness would be shown, and that the development of the real facts in every case was the object sought. At the same time absolute firmness was maintained in requiring obedience to rules and instructions. The system of discipline by record was in effect and it was the purpose to establish the feeling that every infraction of the rules, and every breach of discipline, would result in an entry in the record of the responsible employee. Yardmasters and other officers were encouraged to strengthen their own positions as much as possible by eliminating personal feeling and all display of temper in dealing with the men and by the personal assumption of authority for all instructions; they were afforded thorough support, but cautioned against hasty action which might necessarily mean the reversal of their decision upon appeal to higher authority. All grievances were disposed of promptly and a policy of liberality in disposing of doubtful wage claims adopted; on the other hand it was to be clearly understood that the men were well paid, and that first class service was expected. With the view of reducing accidents, the system of efficiency tests was prosecuted vigorously, and employees failing to comply with the rules in such tests were disciplined promptly. The tests were made as practicable as possible, and it was the aim to have them educational in character, the intended lesson being emphasized when the employee was interviewed in case of failure.

By the discussions at the staff meetings, and by missionary work in the form of conversations with some of the better class of men whenever the opportunity was auspicious, the mental attitude of the entire organization was gradually changed from one of carelessness and indifference to the company's interests to one of co-operation and of personal responsibility on the part of each individual for the success of the organization. The attainment of this "esprit de corps" was probably the most important asset developed in the new organization.

The changes in the methods and the improved discipline were productive of very gratifying results, the most important of which was that the traffic was moved with promptness and regularity. Scarcely less noticeable was the marked increase in efficiency of the switching crews and of the entire working force, which enabled a reduction of 25 per cent in the number of switch engines to be effected, and at the same time eliminated the working driving meal hours by the switching crews, except in the case of two crews which were assigned to switch important passenger trains during meal hours. As the organization became more effective this efficiency was stimulated by the promotion of friendly rivalry between the several yards, by commending crews and individuals for extraordinarily good work, and by establishing high standards and imbuing all with the idea that it was confidently felt that the standards would be maintained.

It was realized that the condition of the yard power had an important bearing on the efficiency of the work, and that there was opportunity for a large saving in the cost of fuel by the application of correct methods of firing and running engines. An assistant master mechanic was appointed to give closer supervision to the repairs to yard engines and a

terminal road foreman to supervise the proper care of the locomotives when in service, and the use of fuel and engine supplies. The results obtained soon demonstrated the wisdom of providing this additional supervision and these officers proved of great value during a campaign on the part of the city authorities to abate the smoke nuisance.

The number of cars damaged in switching gradually diminished as the discipline improved, and the cost of repairing tracks damaged by derailed engines and cars showed a similar improvement. This relieved the car repair and track forces to a considerable extent and allowed them to apply their time to legitimate maintenance work. The efficiency of these forces was increased by persistent educational methods similar to those applied to the other terminal forces but adapted to their particular requirements. Car inspection was tightened, bad order cars repaired more promptly and the condition of the air brake equipment of trains leaving the terminal showed much improvement. Track conditions were likewise bettered, scrap of all kinds picked up promptly, material properly cared for and stored in orderly fashion, and yards and their surroundings kept free from accumulations of dirt and rubbish. Neatness seemed to be the order of the day and added materially to the air of businesslike activity which pervaded the entire terminal.

RAILROAD LEGISLATION IN MICHIGAN

The legislature of Michigan, recently adjourned, adopted nine laws affecting railroads. Two of these, house bills 466 and 467 amending the long and short haul law and the section of the railroad commission act relating to interchange of cars at terminals make no material changes, having been adopted to improve the phraseology of the statutes.

Senate bill 70 creates a board of mediation, conciliation and arbitration to deal with differences between employers and employees. So far as railroads are concerned they are allowed the option of taking advantage of the law or not as they may deem best.

Senate bill 234 provides for the inspection of boilers and creation of a board of three with authority to formulate rules for construction and use of steam boilers. Enforcement of the act is vested in the different municipalities. Any ruling of the board requiring changes in construction or in character of material used shall not apply until six months after approval by the governor and attorney general.

Senate bill 241 requires that when a railroad company enters a suit (to restrain the Railroad Commission from enforcing orders, etc.) it must be before the court of Ingham county.

Senate bill 328 provides that in the laying out of new highways the railroad commission shall have power to regulate crossings with railways, with the view of preventing dangerous crossings.

Senate bill 376 amends section 41 of the general railroad law so as to give the railroad commission authority to order connecting tracks laid between one railroad and another wherever practicable. Hitherto the law has required such connections only where the lines of two companies touched each other.

House bill 125 regulates the care and disposition of diseased hogs, and provides for the transportation of such animals to points where they may be disposed of. Under the general laws the railroads, when offered such shipments for transportation, can reject them as unfit freight.

House bill 150 puts on railroad companies the cost of paving streets crossing the railroad, including all necessary improvements and the furnishing of sewers. This, we understand, applies only to new streets.

NEW ZEALAND RAILWAY ADVERTISING.—The New Zealand Railway Department has decided that in future it will itself handle the business of advertising on railway stations instead of calling for tenders and letting contracts for that purpose.

Railway Storekeepers' Association Convention

Last Day's Proceedings of Annual Meeting Included Papers on Marking Couplers and Handling Signal Material

A report of the first two days' proceedings of the twelfth annual convention of the Railway Storekeepers' Association, which was held at Hotel Sherman, Chicago, May 17-20, was published in the *Railway Age Gazette*, May 21, 1915, page 1039.

The committee on the Uniform Grading and Inspection of Lumber, of which J. H. Waterman, C. B. & Q., is chairman, presented a brief report outlining the action taken during the year. The chairman stated that very little could be reported owing to a series of disappointments. Various conferences with lumber manufacturers' associations which it was hoped would lead to a better understanding between the railroads and the manufacturers as to specifications, etc., did not take place. These conferences were cancelled or postponed through no fault of the committee.

In a brief address, in which he referred particularly to the paper by W. H. Clifton on Substitutes for Expensive Lumber, A. E. Manchester, superintendent of motive power of the Chicago, Milwaukee & St. Paul, told of cars in service for 35 years on his road equipped with siding and roofing of high grade white pine, the wood still being in perfect condition. He also mentioned a building which has recently been wrecked, the lumber costing at the time the building was erected, 50 years ago, nine dollars per thousand feet. After the building was wrecked this lumber was sold for \$27 per thousand feet.

J. H. Waterman, superintendent of timber preservation, Chicago, Burlington & Quincy, condemned the practice of accepting rejected lumber for any use whatever.

G. G. Yeomans told of at one time accepting rejected lumber on the Burlington at lower prices until 50 per cent. of the contents of the yard was culls. Several purchasing agents stated that there was no trouble in getting good lumber if the poor quality lumber is refused and the shipper compelled to pay the freight both ways. About 15 of the railways represented at the convention refuse to accept rejected lumber at any price. A member told of receiving a number of draft timbers, some of which were 10 ft. 3 in. long and some 12 ft. long. The shorter timbers were all satisfactory while about 50 per cent of the 12 ft. timbers were culls, the ends being in such a condition that the timbers had to be cut down to 10 ft. 3 in. The result of this practice was that the storekeeper was overstocked with 10 ft. 3 in. draft timbers while there was a shortage in 12 ft. timbers.

MARKING OF COUPLERS AND PARTS

The committee communicated with all the leading coupler manufacturers of the country and, while their suggestions were of some value, the members came to the conclusion, after tabulating various makes and styles of couplers and repair parts which are manufactured at the present time, that it would be better to number all parts, rather than to number a coupler and use a prefixed letter or letters to designate the parts. The committee therefore recommended the assigning of a series of numbers to each make of coupler and parts; the appointment of a standing committee to take care of assigning additional numbers as required; the publication of a booklet listing the various parts with the assigned numbers; and insistence, on the part of purchasing agents, on having manufacturers show, in raised figures wherever possible, the number applying to any particular part on the body of such part.

The committee submitted a list of such couplers and parts as it has been able to gather and has assigned numbers which it feels will give the desired results.

The report is signed by A. J. Kroha (chairman), C. M. & St. P., and L. H. Tutwiler, B. & O.

Discussion: The chairman of the committee stated that the manufacturers believe that all the information there is room for

is now placed on couplers and parts, but he also stated his belief that if the association insists that the recommended numbers be placed on the couplers and parts, the manufacturers will agree to it. The report was adopted and referred to the American Railway Association for its action.

STANDARDIZATION OF TINWARE

W. F. Jones, New York Central, the chairman of the committee on the Standardization of Tinware, stated that the committee had no printed report but that the previous recommendations were still in the hands of a committee of the Master Mechanics' Association and the report was expected at the June convention in Atlantic City. The members of the association were referred to the issues of the *Daily Railway Age Gazette*, published at the Master Mechanics' and Master Car Builders' Association conventions at Atlantic City, for information as to the action of the Master Mechanics' Association.

BOOK OF STANDARD RULES

The report of the committee on the book of standard rules consisted of an index for the book of rules which was adopted at the 1914 convention.

HANDLING SIGNAL MATERIAL

C. R. Ahrens, storekeeper, Delaware, Lackawanna & Western, Hoboken, N. J., presented a paper on the above subject, of which the following is an abstract:

All railroads do not handle signals and repair parts through their stores department. It happens to be the case on the Lackawanna and I believe the practice has been completely successful, both in keeping signal stock down to a minimum and in getting material to the place wanted at the right time, not only for repairs, but on new installations as well. This requires the greatest care and vigilance on the part of the storekeeper in charge of signal material; first, in order to meet the views of the management of the road; second, in regard to the needs of the signal department, in not delaying its work by failing to have material on the ground when wanted.

The storekeeper in charge of signal material should work in accord with the signal engineer or his assistants, not only in regard to any work being done but in changes in types of signals and repair parts.

To keep down the stock to the lowest possible quantity, and yet have material when wanted is no easy task, for where the signal stock is concentrated at one store, the storekeeper cannot borrow or transfer. To keep from getting accumulations of inactive or obsolete material is just as important as it is to have material when wanted, for we must not keep the signals out of operation on account of not having material for repairs. On railroads having large mileage where the signal material is handled by the stores department it is necessary to carry signal material at more than one store unless they have good facilities for quick shipment anywhere on the line where a derailment or breakdown may occur.

Where a freight transfer is located near the storehouse, it may be possible to reduce labor expense in the storehouse and facilitate shipments by having the different division foremen and supervisors have their requisitions for maintenance material forwarded at a certain date, and arrange for material ordered on the purchasing agent's requisitions to arrive about the same date.

In handling the smaller repair parts, bins are used similar to those in any storehouse, while such items as front rods, throw rods, lock rods, etc., I have found are handled more quickly by placing them on a raised floor or platform while

detector bars, ladders, etc., can be placed in the same rack with signal pipe, poles, etc. Foundation legs, piers, etc., are piled on the storehouse platform where they can be conveniently loaded and unloaded.

When a practical man cannot be secured for receiving clerk it will be found helpful on items of signal material, either for stock or direct shipment, to number each item ordered and request the signal companies furnishing them to show on their shipping notices the parts which apply on each item ordered; for instance, if a cylinder complete for a switch movement is shipped to us in three parts each part on the shipping notice is marked "Item 16" or whatever number the cylinder was numbered on our requisition.

We have a signal machine shop in the same building as our storehouse and all relays, mechanisms and such items returned to us for credit or repairs are turned over to this shop and, after they are looked over and repaired, we take them back and allow credit for the value, provided the signal department advises that the repaired material can be used in place of new. All classes of signal scrap are shipped to the division storehouse on each division, except worn out battery elements, for which we have a special place prepared.

Each requisition received from the signal department is numbered. When the material ordered has been shipped we make a shipping notice covering the shipment, sending a copy to the general storekeeper, a copy to the signal engineer and a copy to the supervisor in charge of the division ordering the material. The last named in turn sends the notice with a detachable stub to the maintainer or repairman and, if the material has been received in good condition, the stub is returned to us with the signature of the man who ordered the material. At the end of the month a statement is made up, showing all notices covering signal material, and this is furnished to the signal engineer.

R. D. Long, C. B. & Q., also presented a paper on this subject, in which he stated that the signal supply storekeeper should be a practical signal man. An untrained man in this position can waste much material while a trained man can save much, particularly by reworking and using second hand material. The plan of handling signal material on the Burlington was outlined. A change in signals on this road made obsolete a considerable amount of material such as relays, etc. These were changed so that they could be made use of, and a considerable saving resulted. This could not have been accomplished without a signal man being in charge of the stores for this branch of the work.

ELECTION OF OFFICERS

The nominating committee presented a report recommending that J. G. Stuart, general storekeeper, Chicago, Burlington & Quincy, Chicago, be elected president; W. A. Summerhays, general storekeeper, Illinois Central, Chicago, first vice president; H. S. Burr, general storekeeper of the Erie Railroad at New York, second vice-president, and J. P. Murphy, general storekeeper, New York Central, Collinwood, Ohio, secretary-treasurer. The recommendations of the committee were unanimously adopted by the convention.

RAILWAY CONSTRUCTION IN BOLIVIA.—The government of Bolivia has announced its intention of beginning at once the construction of a railway from Tupiza in southern Bolivia to La Quiaca in the northern part of Argentina. La Quiaca is near the Bolivia-Argentina boundary and is the northern terminus of one of the great Argentine lines. Tupiza is on the Bolivian railway system and is connected with the Pacific coast by three lines touching the coast in southern Peru and northern Chile. The connection of these two lines, now proposed, will mean another trans-continental railway for South America. The Bolivian railway system consists chiefly of a north and south trunk line through the great elevated region in the vicinity of Lake Titicaca which line is connected with the Pacific coast by three distinct lines running respectively to Antofagasta and Arica, Chile, and Mollendo, Peru.

JULIUS KRUTTSCHNITT URGES CHANGES IN MEDIATION AND ARBITRATION LAW

Amendment to the Newlands mediation, arbitration and conciliation act to make the law apply to all railway employees, co-ordination of the Board of Mediation and Conciliation with the Interstate Commerce Commission and compulsory investigation and mediation of labor controversies, are urged in a letter written by Julius Kruttschnitt, chairman of the executive committee of the Southern Pacific, to Frank P. Walsh, chairman of the United States Commission on Industrial Relations. The letter was written for the purpose of amplifying some of the views Mr. Kruttschnitt expressed when testifying before the commission at Chicago on April 10, in reply to questions as to what could be done to settle labor disputes and maintain industrial peace. Mr. Kruttschnitt says in part:

"The act of Congress, approved June 15, 1913, known as the Newlands act, providing for mediation, arbitration and conciliation in controversies between certain employers and employees, is a great improvement on the Erdman act, which it superseded, but it relates to employees engaged in train service or train operation only, of common carriers engaged in interstate commerce. Its usefulness would be greatly increased if it were made to apply to all railway employees engaged in the interstate business of the employer, including those engaged in keeping in repair cars, locomotives, appliances, machinery, track, roadbed, and other instrumentalities of interstate commerce. The Board of Mediation and Conciliation, appointed by the President under the act, has proven useful in maintaining industrial peace; but as it frequently results, as a consequence of invoking the services of this board, that railway expenses are increased, it is very important to the carriers that the board should be closely co-ordinated with, or, better still, subordinated to the Interstate Commerce Commission so that the same authority responsible for increasing expenses of the carriers should at the same time incur a corresponding responsibility for providing revenue to meet the expenditures. The reasonableness of such a provision is apparent when the complete control of revenues, and almost equally complete control of expenditures by the government at the present time, is considered.

"The Newlands act provides that when a controversy arises either party may apply to the Board of Mediation and Conciliation for its adjustment, and the board may offer its services to the parties in controversy where interruption to public service is imminent. There is no obligation, however, other than a sense of obligation to the public, on either employer or employee to submit differences to mediation. Instances have occurred where mediation and arbitration have been stubbornly refused, with utter disregard of the public's interest and rights, and the act offers no remedy. This defect could apparently be remedied, as is done in the Canadian industrial disputes investigation act of 1907, which makes a combination, lockout, or strike illegal until the questions at issue shall have been thoroughly investigated and made public; and there should be a provision that where the board offers its services for investigation, mediation, and conciliation, it shall be obligatory on and not optional to the parties, to submit their differences so that the public may judge the dispute intelligently.

"The desirable feature in the Canadian act is that it compels investigation and publicity, and peace pending investigation; and paves the way, as the Newlands act does, to arbitration, which, however, is optional with the parties to the dispute. The Canadian Department of Labor, in its bulletin of April, 1914, reviews the proceedings under the industrial disputes investigation act of 1907 for a period of seven years, during which it had been in effect. One hundred and sixty-two applications had been received, as a result of which 141 boards of conciliation and investigation were established. In 19 cases the matters in dispute were adjusted by mutual agreement while steps were

pending for the establishment of boards. Two applications were under consideration at the end of the year. There were altogether only 18 cases in seven years in which strikes were not either averted or ended through the instrumentality of the act. Out of this total, one occurred in the operation of railways, five in railway offices, shops and yards, and one in the operation of a street railway. In a report dated December 9, 1912, on "The Industrial Disputes Investigation Act of Canada, 1907," made by Sir George Askwith, chief industrial commissioner to the British Board of Trade, and presented to both houses of Parliament of Great Britain, the purposes of the act are defined as follows:

The simple purpose of the act is to insure the recognition of the interests of the public as a third party in trade disputes, and the insistence that that third party, through the government, shall have a voice in regard to a dispute affecting their interests, and, according to the act, before a stoppage of work takes place. In practice, the recognition extends to cases arising before or after a stoppage of work. While this principle of the recognition of the public interest in trade disputes is emphasized in the act, the actual interference with the parties in the settlement of their differences is sought to be reduced to a minimum by the act being confined to industries whose uninterrupted continuance is of high importance to the well-being of the nation (mining, railways, shipping, and other public utilities); and to a brief suspension of the right to stop, as distinct from a complete prohibition of stoppage.

"Reports of the satisfactory operation of the Canadian act, and a conviction that like benefits would accrue through the adoption of some of its provisions in the United States, induced me to send an assistant to Canada in September, 1914, to learn at first hands from the managers of Canadian railways, and from the Canadian Department of labor, their experience with the operations of the act. The opinion alike of railway executives, and of the commissioner of labor, was that their disputes and investigation act was satisfactory and very successful in preventing lockouts and strikes. In discussing the results of our observations with the executive heads of some of our important railway systems the opinion was expressed, without exception, that the provisions of the Canadian act were most helpful in the interests of employers, employees, and the general public, the three parties to every industrial disturbance."

WAGON HAULS FOR FARM PRODUCTS

In a bulletin issued by the Department of Agriculture, Frank Andrews, chief of the division of crop records, describes the results of an inquiry just completed by the bureau of crop estimates, showing that the average distance from market of the farms of the United States is $6\frac{1}{2}$ miles, while those farthest away from market, excluding the rarer instances, average 8.7 miles. The number of round trips per day averages for all farms 2.1, and for the more remote farms 1.6 trips. In other words, it requires about one-half day for the average farmer to make a round trip with a wagon from farm to market and back, and nearly two-thirds of a day for the farmers who are farthest from market. The average wagon load of cotton is three bales, or about 1,500 lb., while the average wagon load of wheat is 53.5 bu., or 3,200 lb., and of corn 40.5 bu. The estimated time spent in hauling from farms in an average year is given as 6,358,200 days for corn, 6,857,400 days for wheat, and 2,532,300 days for cotton.

The article states that while the figures for 1906 are not strictly comparable with those for 1915, it is evident that wagon hauls are shorter than they were nine years ago. In 1906 the average haul from farm to shipping points was, for wheat, 9.4 miles; for corn, 7.4 miles; cotton, 11.8 miles. Railroad building during the past nine years has brought some farms nearer to shipping points and markets and has helped to shorten the average distance hauled and to increase the average number of trips per day. It is also stated that the improvement of wagon roads during the past nine years has probably helped to increase the average quantity of farm products moved by a day's wagon haul.

A. R. A. REPORT ON FREIGHT EFFICIENCY

The report of the Committee on Relations Between Railroads, presented at the semi-annual meeting of the American Railway Association in New York City, May 19, was briefly noticed in our account of the meeting, printed in the issue of May 21, page 1088. The most important feature of this report is the series of resolutions (adopted by the association) which were prepared by the Committee on Packing, Marking and Handling of Freight. These are as follows:

(1) WHEREAS, For the fiscal year 1914 the railways of the United States and Canada have paid out over \$36,000,000 for freight loss and damage, a larger amount than ever before; and

WHEREAS, No one department of the railways and no one association is competent to deal exclusively with the prevention of loss and damage and the reduction of these payments, but a combined effort is necessary by practically all railway associations, departments, officers and employees, be it

(a) *Resolved*, That, as the extension of interline or through waybilling of freight from point of origin to destination is desirable as an aid in economical and efficient railway transportation, lessens the time required for transporting freight, is helpful in the operation of junction agencies, reduces the number of overcharge claims, and facilitates the investigation of loss and damage as well as overcharge claims, the attention of the traffic associations and the traffic departments of the railways members of The American Railway Association be called to the apparent need for joint through rates and division sheets covering such rates for apportioning among carriers the revenue incident to through waybilling of freight; and be it

Further Resolved, That the utmost co-operation be recommended between the various traffic organizations, the railway traffic departments and the Association of American Railway Accounting Officers in obtaining as promptly as practicable the greatest possible extension of through or interline waybilling of freight.

(b) *Resolved*, That the auditing departments be requested to enforce proper rules for the prompt and accurate billing of freight in accordance with the standards of the Association of American Accounting Officers, with special reference to over and astray freight.

(c) *Resolved*, That the classification committees be requested to continue their work of adopting uniform and effective rules for the packing and marking of less than carload freight and for the loading of carload freight, and that they be further requested in the formulation of their loading rules to co-operate with the Master Car Builders' Association.

(d) *Resolved*, That the traffic associations be requested to eliminate so far as practicable all exceptions to classification rules for the packing, marking and loading of freight.

(e) *Resolved*, That the traffic departments be requested to co-operate in the elimination of these exceptions, and that they be further requested to give their hearty co-operation to the other associations and departments in the enforcement of these rules for the packing, marking and loading of freight.

(f) *Resolved*, That the operating departments be requested either directly or in co-operation with the inspection bureaus to inspect and enforce the administration of the packing, marking and loading rules in the classifications, the loading rules of the Master Car Builders' Association and the loading and l. c. l. rules of the American Railway Association, and that they be further requested to experiment with and suggest improvements in these rules and standards.

(g) *Resolved*, That the inspection bureaus be requested in co-operation with the traffic and operating departments, to inspect and enforce these rules and to suggest improvements therein.

(h) *Resolved*, That the Freight Claim Association be requested to so amend its rules that claims involving defective equipment be paid by the road on which the car is loaded, unless that road can clearly show that it has inspected and repaired the car in

accordance with the rules of the Master Car Builders' and American Railway Associations.

(i) *Resolved*, That the Master Car Builders' Association be requested to continue its efforts to secure proper inspection and maintenance of equipment and safe loading of freight, and it be requested to co-operate with the classification committees in the question of loading.

(j) *Resolved*, That the general managers' associations be requested to continue their co-operation in securing safe carriage of freight.

(k) *Resolved*, That the American Association of Freight Agents be requested to continue its efforts in the prevention of loss and damage and that it be asked to recommend to the American Railway Association such changes in the rules as it thinks desirable.

(l) *Resolved*, That the operating departments of the railways members of the American Railway Association be further requested to frame and enforce rules for the careful handling of freight during receipt, transfer and delivery by local and through freight trains and in yards, and for the prevention of robbery, and that they be recommended to keep their interested employees, including agents, freight and yard conductors and enginemen, advised as to the extent of loss and damage on their lines, and especially of loss and damage for which they are responsible.

WEIGHING AND PER DIEM

On the recommendation of the committee a resolution was adopted by the association to the effect that over and short reports at all common points be checked at least twice a month.

Three interpretations of the National code of weighing rules, covering L. C. L. freight weighed on track scales and certain phases of the reweighing of cars loaded and light, were presented by the committee and approved by the association. A resolution was also adopted providing that weight agreements at highly competitive points should be issued and checked by weighing and inspection bureaus or other joint agencies.

On the recommendation of the committee a resolution was adopted that when a subscriber to the per diem rules agreement delivers cars subject to the per diem rules to a non-subscriber it should collect not less than the per diem rate.

Per Diem Rule 1 was amended on the recommendation of the committee to read as follows:

1. The rate for the use of freight cars shall be 45 cents per car per day, which shall be paid for every calendar day, and shall be known as the per diem rate; except that where per diem is not reported to car owner within six months from the last day of the month in which it is earned, the rate shall be increased 5 cents per car per day.

An amended form of Per Diem Rule 14, offered by the committee, was ordered referred to letter ballot.

The committee recommended changes in Car Service Rules 3, 14 and 15, which were approved by the association. Rule 3 provides that empty cars may be short-routed, with the consent of the roads over which they are to move and subject to Rules 1, 3 and 4, at a reciprocal rate of $2\frac{1}{2}$ cents per mile, plus bridge and terminal arbitraries, with a minimum of 100 miles for each road handling the car. The road requesting the movement must secure such consent and pay the charges.

Under Rule 14 no mileage will be paid for switching movements at terminals, nor for movement of empty cars for which charges are assessed under freight car tariffs. Rule 15, covering cases where freight is transferred because of a defect in a car that is not safe to run, according to M. C. B. rules, is changed so as not to include cases where the repairs can be made under load as per M. C. B. Rule 2.

An amendment proposed to Car Service Rule 5 was referred to letter ballot. A resolution was adopted requesting the Master Car Builders' Association to enforce its Interchange Rule 30 at all interchange points. The committee reported that the amended demurrage rules providing for an increased rate on refrigerator cars were put into effect generally in New England and Trunk Line territory on February 1, 1915, and in Central, Western and Southern territory on April 1, 1915.

The association approved amendments to Demurrage Rules 6 and 8, making more strict the regulations for collecting demurrage on shipments delayed because the shipper does not furnish billing promptly, and for collecting from consignee on goods so frozen in transit as to delay unloading.

Amendments have been made to Interpretations Nos. 902 and 903 of the Demurrage Rules, and new interpretations have been made of Nos. 364 and 365; and these have been agreed to by the National Industrial Traffic League. On the recommendation of the committee, an amended form of Constructive Placement Notice was adopted, to be put into use October 1, next.

THE REWEIGHING AND RESTENCILING OF CARS

By J. V. JAMES

Chief Clerk, Special Department, Missouri, Kansas & Texas, Parsons, Kan.

One of the greatest leaks in the transportation of freight results from the incorrect weights stenciled on equipment. Recently in relight-weighing and restenciling 500 cars, over 85 per cent showed a decrease of from 200 to 500 lb. in tare weights. These cars were cleaned of all refuse and reweighed in clear weather. Fifteen per cent of the total number showed an increase in the tare weight from 200 to 300 lb. over the old weights, caused by the installation of United States standard appliances and new draft rigging. This discrepancy averaged about 250 lb.

As a rule heavy-repair cars are light-weighed and restenciled at repair points, but there are points where repairs are made where there are no track scales, consequently these cars will probably go several months before being reweighed. On the other hand, wooden and steel underframe cars will run from 8 to 14 months before being reweighed and the new weights will run from 200 to 500 lb. lighter than the old.

M. C. B. Rule No. 30 provides that all wooden cars and steel underframe cars shall be reweighed and restenciled every 12 months during the first two years they are in service, and thereafter every 24 months. All steel cars must be reweighed and restenciled at least once every 36 months. This rule is one of the most important in the M. C. B. code both for the shippers and the transportation companies and yields a good profit for doing the work. Weighing foreign box and other cars, except stock cars, nets an average of about 80 cents each and it saves that much on each system car. On account of the expense of cleaning stock cars, weighing will not net any revenue, but at points where this class of equipment is cleaned and disinfected the light-weighing and restenciling is just as profitable as with any other equipment.

The writer recently started a campaign on the matter of light-weighing and restenciling cars and was surprised to find such a large number of employees whose duties pertained to such work who were absolutely unaware of the fact that any revenue could be derived from such work. It had never occurred to them that in hauling a car weighing 500 to 1,000 lb. less than the stenciled weight, loaded with coal for a distance of 200 miles, at a rate of \$1.50 per ton, the company was losing \$0.75 to \$1.50 and this is the lowest rate applied. After a tentative plan was outlined with all yardmasters, weighmasters, engine foremen and employees of the car department, cars of certain classes which could be held from 5 to 8 hours without unnecessarily delaying them were reweighed. This class of equipment consisted of mine empties coming in during the day that would not be run out until the early morning mine trains. All cars to be reweighed in accordance with M. C. B. rules, system and foreign, were carded by the car department to weigh. As this only requires a few seconds nothing was lost if the yard forces did not get time to switch them out for weighing, but the carding of all cars coming under the rule made it possible to use the yard engines for a valuable service at every possible opportunity. When a car to be weighed was found in making a switch it was placed on the scale track until there was an accumulation of

10 or 15 cars. They were then weighed light, the weighmaster taking the old and new weights and the car men immediately restenciling all cars.

All stock cars brought from the disinfecting plant well cleaned are weighed and restenciled, as it only requires about 30 seconds to weigh each car. Thus the time to weigh a cut of from 15 to 20 cars can be found some time during the day with any kind of business. The scales used are Fairbanks standard beam track scales, 42 ft. long, 100,000 lb. capacity, thus necessitating cutting all cars at one end and at both ends when possible. While it has been claimed that proper weights can be obtained by weighing cars coupled at both ends, our observations are that there is too much of a chance that proper care will not be exercised, and we require that all cars be uncoupled at one end at least when being light-weighed.

After getting all yard employees interested in the matter of reweighing foreign cars to earn a profit and system cars to save the cost of having other lines do it, and at the same time increasing our margin of profit by correct weights, our number of cars reweighed and restenciled per month has increased 300 per cent. A weekly bulletin is issued showing the number of foreign cars light-weighed and the amount earned on same and the number of system cars light-weighed and the amounts saved by doing the work on our own line, also the average discrepancy in weights in favor of the shipper, which, with the correct weights, will reflect a created profit for the company by light-weighing and restenciling. The forces in the different terminals vie with each other to make the best showing which, of course, is based on the number of cars handled at a terminal.

In one weekly review of the light-weighing of cars it was noticed that a foreign car was weighed which had not been light-weighed according to the stenciled weights, for six years. This car's stenciled weight was 36,300 lb., and the new weight was 34,200 lb., a difference of 2,100 lb. To satisfy curiosity the last move of this car under load was traced. It was found that the car had been received loaded with ore. The rate from the point of origin to destination was 11½ cents per 100 lb. The car was not weighed before loading, but was weighed after being loaded and the stenciled light weight on the car was used in determining the weight of the load, which showed the load's net weight was 61,000 lb. The railroad had hauled 2,100 lb. of ore 230 miles for nothing, having practically given the shipper \$2.41 in this one trip for the lack of a few minutes work reweighing and restenciling the car to the correct weight at some scaling point.

In this matter, cars of some of the largest and most efficiently operated trunk line railroads in the United States have a tendency to show just as great a neglect as some of the smaller lines. In summing up this matter, it appears to the writer that one of the greatest opportunities for increasing and creating revenue, is to place correct weights on equipment and I. c. I. shipments, which will insure the railroad companies getting paid for what they actually haul.

WITHIN THE MEMORY OF ONE MAN

In a recent address before the Engineers' Society of Western Pennsylvania, A. W. Thompson, vice-president of the Baltimore & Ohio, said that "there is living in Cumberland, Md., the first agent of the Baltimore & Ohio at that point, Judge Oliver Gephart. In company with his father he attended the laying of the corner-stone of the Baltimore & Ohio at Mt. Clare, Baltimore, in 1828, and remarked at the time that it was his desire to reach the age of Charles Carroll, of Carrollton, who was then past 90. Mr. Gephart is now past 96 years of age, is in full possession of all his faculties and his reminiscences are extremely interesting. He worked on the grading of the canal near Cumberland, and associated himself with the Baltimore & Ohio in its early days.

"While serving as ticket agent at Cumberland he studied law, was admitted to the Maryland bar and later became judge of the Orphans' Court. He is a very well-known and

influential citizen of Cumberland and takes a keen interest in everything pertaining to his home city. He is a director of the Second National Bank, one of the strongest banks in the state of Maryland, and for 39 years has attended the directors' meetings regularly.

"Thus within the memory of one man, of over a period of 80 years, the American railroad transportation machine has developed from stage coach to steel passenger train. Out of the old stage coach days and the period of early railroad-ing Judge Gephart has passed to our time with its fast engines, dining cars and automobiles to meet them. It is now possible for him to travel in one day, surrounded by comforts undreamed of, a distance which would have required a week in his boyhood."

MASTER BOILER MAKERS' CONVENTION

The annual meeting of the Master Boiler Makers' Association opened at the Hotel Sherman, Chicago, on Tuesday morning, May 25, President James T. Johnston, Atchison, Topeka & Santa Fe, presiding.

An address was made by E. W. Pratt, assistant superintendent motive power and machinery, Chicago & North Western, of which the following is a brief abstract: The work of boiler inspection has been carried on and developed by the government with very little opposition. The government inspectors and the railroad representatives have co-operated for the benefit of both and of the public. There were good reasons for some of the railroad legislation enacted during the past years, but the general opinion seems to be that this has been overdone and that the railroads have been exhausted by the excessive doses of correctives applied. They now need a rest.

Statements made before legislative committees as to the millions of dollars involved by certain enactments do not produce any very great effect. On the other hand, a simple statement made before such a committee in reply to a request for detailed information from the general manager on any topic and showing, for instance, that it is necessary for a railroad to haul 4½ tons of coal one mile to pay for the cost of a postage stamp, has a much better effect on the committee and the galleries than many statements in which millions of dollars figure.

Mr. Pratt also mentioned the tendency of politics to become cleaner and the necessity of men in responsible positions, such as occupied by the master boiler makers, taking an active part in civic affairs. Decreasing the revenue of the railroads, coupled with increases in taxes and wages, makes it dependent upon all interested to see that conditions are improved. To this end every man should go to the primaries and see that the proper men are nominated and elected. Keep in close touch with the employees. Be fair and honest with them, for without the support of rank and file no man can secure permanent advancement. Be courteous and considerate, and be as careful as to how a thing is said as to what is said, and the strength of the individual as well as the Master Boiler Makers' Association will be augmented.

Mr. Pratt recommended the use of oxy-acetylene and electric welding machines and urged the necessity of having as many shops and terminals as possible equipped with them. He also directed attention to the necessity of following closely the minute details of boiler work, such as keeping the flues clean; inspecting the beads on flues; boring out flues; inspecting beading tools to see that they are in proper condition; maintenance of arches, ash pans and front ends; watching the tendency of the sheets to corrode at the grate frame and packing the space between it and the sheets with something to keep the ashes out; last of all the advisability and necessity of being courteous to the men.

The treasurer's report showed a balance on hand of \$758.66. The secretary's report was not ready because of illness. This covers the proceedings for Tuesday. The remaining sessions will be covered in our next issue. A list of the exhibitors will be found in the News Section.

General News Department

At the meeting of the American Railway Association held in New York last week, the sum of \$7,500 was appropriated to carry on the investigations of rail manufacture conducted by the Rail Committee of the American Railway Engineering Association. This action rescinds that taken last November by which the appropriations which have been made for several years were discontinued.

W. G. Lee, president of the Brotherhood of Railroad Trainmen; A. B. Garretson, president of the Order of Railway Conductors; W. S. Carter, president of the Brotherhood of Locomotive Firemen and Enginemen, and Samuel Gompers, president of the American Federation of Labor, have addressed telegrams to Governor Brumbaugh of Pennsylvania, asking him to veto the bill repealing the Pennsylvania "full-crew" law passed by the legislature.

The "Old Guard" of the Nashville, Chattanooga & St. Louis, recently held, at Nashville, its eighth annual meeting. This organization is composed of men who were working for the road during the civil war, and who have since continued in the service. When the "old guard" was formed in 1907, there were 26 members, but since that time eleven have passed into the great beyond. This year fourteen of the fifteen members were present. Five of the members of the old guard were in the same company of the First Tennessee Regiment, and one of them, J. H. Latimer, was conductor of the train which conveyed Jefferson Davis, president of the Confederate States, and his cabinet, out of Richmond. Major W. L. Danley is the oldest general passenger agent in the United States, in point of service. He began railway service in 1857, and has been general passenger agent since August, 1868.

The "roll of honor" issued by the Pennsylvania Railroad monthly in connection with the doings of its pension department, gives in the last issue a portrait of George W. Barker, who has been track watchman in the tunnel at Baltimore for 34 years. During that time he has walked about ten miles a day, or enough to go nearly five times around the world; and more than three-fifths of this distance was within the tunnel. He has never neglected his duties or received a reprimand. William Furman, who also retires at this time, began his service as second fireman, on a wood burner, of the Camden & Amboy, when all engines on that road had two firemen. George W. Scott, who has just died at Bordentown, N. J., at the age of 93, and who has been on the pension list many years, entered the service of the Camden & Amboy in 1846, was a fireman in 1850 and an engineer in 1852. He was the man who, in 1893, ran the old locomotive "John Bull," from Philadelphia to the World's Fair at Chicago under its own steam.

The United States Civil Service Commission will hold examinations June 23 for the position of junior railway civil engineer for the Interstate Commerce Commission, grade 1 and grade 2; salaries in grade 1 from \$1,200 to \$1,680, and in grade 2 from \$720 to \$1,080. Applicants must be between 21 and 36 years old.

The United States Civil Service Commission announces examinations for expert passenger-rate clerk, for men only, on June 23, 1915, to fill a vacancy in this position in the Quartermaster Corps at St. Louis, Mo., at a salary of \$1,200. This position is due to the maintenance of troops on the Mexican border, and may not continue permanently. The duties are the revision, preparation and payment of passenger transportation accounts. Applicants must be thoroughly conversant with the intricacies of the various passenger compendiums and tariffs and the rules and customs, both written and unwritten, of carriers in matters of divisions, etc., when used in settlement for service performed for the government over land-grant, bond-aided, free, and indebted carriers. Only those who have had experience in general passenger offices or in ticket-auditing offices of railroads will be considered. Age, 20 years or over on the date of the examination. Applicants must submit to the examiner on the day of the examination their photographs, taken within two years, securely

pasted in the space provided on the admission cards sent them after their applications are filed. Tintypes or proofs will not be accepted. Intending applicants should apply for Form 1312, stating the title of the examination for which the form is desired, to the United States Civil Service Commission, Washington, D. C., or to the United States Civil Service Board at any of the numerous cities where such boards are maintained.

Disastrous Collision in Scotland

Press despatches of May 22 report a collision of passenger trains on the Caledonian Railway at Gretna, Scotland, nine miles from Carlisle, England, which, measured by the loss of life, appears to be the worst railroad disaster that ever occurred in the United Kingdom. One of the trains was filled with soldiers, about 500 men, and the total number of persons killed is given as 156, of whom a considerable number were burned to death, the wreck taking fire immediately. Fully as many more were seriously injured. No information is given as to the cause of the collision. It appears that first there was a rear collision on the southbound track and that this wreck was immediately run into by an express train on the northbound track.

Brooklyn Marginal Railroad

The New York legislature, after months of discussion, has passed, and the governor has approved, the Cullen bill, authorizing the city of New York to make a contract for the operation of a freight railroad along the east shore of New York Bay from South Brooklyn northward. Such a line would connect a number of terminal properties where cars are now delivered by boats. To form a satisfactory organization for the operation of a road of this kind, it is necessary to secure the co-operation of the important trunk lines terminating on New York Bay, and the present law removes restrictions, hitherto existing, which forbade the railroads from participating in such an enterprise. Extensive tracts of the property desired are already owned by the city and additional tracts are to be bought.

Illinois Campaign Against Train Limit Bill

In the Illinois legislature the bill limiting the length of freight trains to 50 cars, which was killed in committee, has been placed on the calendar of the house.

In view of this action the railways of Illinois, on May 25, began an advertising campaign in the newspapers of the state to show that the proposed legislation would not only cost the railways large sums of money, but that it would tend to increase rather than reduce the number of accidents. A half-page advertisement was published in the Chicago morning papers of May 25, with the heading in large display type, "A bill to increase accidents on railways." Statistics of accidents and train mileage were given to show that when the number of freight trains run has increased there almost invariably has been an increase in accidents, and when the number of freight trains has decreased there has almost invariably been a decrease in accidents. The advertisement pointed out that the purpose of this proposed legislation is not to promote safety, but to increase the number of men the railways must employ, and that its passage would cause an enormous increase in railway expenses. The advertisement concluded as follows: "Communicate with your representatives and senators at once and tell them that you are opposed to this legislation." This advertisement was followed by another showing the increase in railway expenses, and both advertisements were published in papers throughout the state and posted on bulletin boards at railway stations.

The Lumbermen's Association of Chicago has addressed a circular to its members asking them "to get after the mem-

bers of the legislature immediately" and to oppose the bill. The letter says in part: "As a lumberman you are threatened today with an inexcusable increase in freight rates on account of labor union activity. Your assistance is needed to show the legislators that you do not believe in inefficiency, do not believe in increasing the danger of railroading, do not believe in increasing the cost of operating and do not believe in unnecessarily increasing freight and passenger rates by placing a foolish burden upon the railroads. This bill, if passed, would greatly increase the cost of operating trains of dead freight, such as lumber and coal, but is being strongly urged by the labor unions so as to give more men employment."

A committee of presidents of the railways has sent to the newspapers a statement appealing to the people to cause the defeat of the bill in the legislature. Statistics are given to show that the bill would unnecessarily increase railway expenses in Illinois by \$7,350,000 a year, would render valueless investments amounting to over \$53,000,000 in Illinois, and would force new and unnecessary investments of over nineteen millions. The interest at 5 per cent on the new investments necessary would be \$981,000, and the annual increase in operating expenses would be \$6,368,000.

Accidents to Trespassers, Classified

At the annual convention of the Association of Railway Claim Agents, held at Galveston, Tex., May 12, F. V. Whiting, of the New York Central, explained the method by which the committee of the association, in charge of this work, had gathered its statistics concerning the trespassing evil; and in connection with his statement gave, for the fiscal year 1914, the following data covering the statistics of accidents to trespassers on railroads aggregating over 191,000 miles in length. This statement includes nearly 11,000 items, or about 90 per cent of the total for the year reported by the Interstate Commerce Commission. It is as follows:

Classification of Accidents to Trespassers

	Number	Per cent
4. Extent of accident.....Killed	4,746	44
Loss of one limb.....	826	8
Loss of two limbs.....	172	1
Other injury	5,041	47
5. Place		10,785
In country district.....	3,421	32
In city	3,482	32
In town or village.....	3,882	36
6. Residence		10,785
Near place of accident..	4,994	46
Far from place of accident	3,876	36
Unknown	1,915	18
7. Was injured person living at home with family or parents?.....		
Yes	4,914	46
No	4,303	40
Unknown	1,568	14
8.		10,785
Male	10,224	95
Female	561	5
Married	2,359	22
Single	4,618	43
Unknown	3,808	35
9. Occupation		10,785
None	1,846	17
Unskilled laborer	3,675	34
Skilled laborer	1,160	11
Profession	159	1
Merchant	99	1
Clerical	134	1
Housewife	281	3
Unknown	3,431	32
10. Regularly employed at time of accident.....		
Yes	2,391	22
No	4,346	40
Unknown	4,048	38
11. Nature of accident.....		10,785
Walking on track.....	4,712	44
Riding on train.....	3,840	36
Other accidents	1,511	14
Unknown	722	6
12. Was injured person known as a tramp or hobo?.....		
Yes	1,313	12
No	6,326	59
Unknown	3,146	29
13. Age		10,785
5 years or under.....	145	1
Over 5 and under 10....	339	3
Over 10 and under 15....	565	5
Over 15 and under 21....	1,608	15
Over 21 and under 30....	3,437	32
Over 30 and under 50....	3,048	29
Over 50 and under 60....	627	6
Over 60 and under 65....	247	2
65 and over	316	3
Unknown	453	4
14. Was injured person intoxicated?		10,785
Yes	1,789	17
No	5,455	50
Unknown	3,541	33
15. Nationality		10,785
American	7,282	68
Foreign	2,086	19
Unknown	1,417	13

Report of Texas Railroad Commission

The railroad commission of Texas has issued its twenty-third annual report, which is for the year ending June 30, 1914. It shows the length of railroad in the state as 15,569 miles, a net increase of 286 miles in twelve months. The new lines put in operation during the year, with the mileage of track (not road) of each, were the following:

Greenville-Northwestern, 11.48 miles; Riveria Beach & Eastern, 9.70 miles; San Antonio, Fredericksburg & Northern, 25.07 miles; total, 46.25 miles. Old lines increasing mileage were: Galveston, Harrisburg & San Antonio, 9.93 miles; Galveston, Houston & Henderson, 114.61 miles; Gulf, Colorado & Santa Fe, 15.31; Houston & Brazos Valley, 4.36; Houston Belt & Terminal, 6.37; Houston & Texas Central, 42.38; International & Great Northern, 5.20; Missouri, Kansas & Texas, 18.14; Pecos & Northern Texas, 103.67; Quanah, Acme & Pacific, 40.70; Rio Grande & Eagle Pass, 4.75; Rio Grande, El Paso & Santa Fe, 4.07; San Antonio & Aransas Pass, 11.78; San Antonio, Uvalde & Gulf, 83.30.

The total assessed valuation of railroads in 1914 was \$339,410,849; in 1913 it was \$433,635,318; average amount per mile in 1914, \$21,842, in 1913, \$22,598.

Boiler Makers' Association Exhibitors

The following concerns had exhibits at the Master Boiler Makers' Association convention, which met at the Hotel Sherman, Chicago, this week:

American Arch Company, New York—Model of Security arch. Represented by LeGrand Parish, W. L. Allison, John P. Neff, H. D. Savage, J. T. Anthony, George Wagstaff, R. J. Himmelright, G. C. Denney and F. G. Boomer.

American Flexible Bolt Company, Pittsburgh, Pa.—American staybolts. Represented by C. A. Seley, R. W. Benson and Louis Weidmeier.

American Locomotive Company, New York—Photographs of locomotives. Represented by C. A. Delaney.

Baldwin Locomotive Works, Philadelphia, Pa.—Photographs of locomotives. Represented by A. S. Goble.

Bird-Archer Company, New York—Boiler chemicals. Represented by L. F. Wilson, J. M. Robb and C. J. McGurn.

Boiler Maker, The, New York—Copies of paper. Represented by George Slate.

Brubaker & Bros., W. L., Millersburg, Pa.—Taps, dies and reamers. Represented by W. S. Rose and J. A. W. Brubaker.

Burden Iron Works, Troy, N. Y.—Staybolt iron and rivets. Represented by John C. Kuhns, Fred Gardner, Gilbert H. Pearsall and D. W. Talcott.

Carbon Steel Company, Pittsburgh, Pa. Represented by Fred T. Connor.

Castle, A. M., & Co., Chicago. Represented by George R. Boyce and L. M. Henoch.

Champion Rivet Company, Cleveland. Represented by D. J. Champion.

Chicago Pneumatic Tool Company, Chicago—Pneumatic drills and hammers, Boyer rivet busters and electric drills. Represented by C. E. Walker, J. C. Campbell, J. L. Canby, G. G. Smallwood, W. S. Delaney, Thos. Aldcorn, G. A. Barden, W. F. Pressinger and J. B. Corby.

Cleveland Pneumatic Tool Company, Cleveland—Pneumatic riveters, chipers, air drills and Bowes hose couplings. Represented by H. S. Covey and C. J. Albert.

Cleveland Punch & Shear Works Company, Cleveland. Represented by A. J. Canfield.

Cleveland Steel Tool Company, Cleveland—Pneumatic hammer, rivet sets, chisel blanks, punches and dies. Represented by R. J. Venning and H. W. Leighton, Jr.

Dearborn Chemical Company, Chicago—Descriptive literature of scientific treatment of feed water. Represented by J. D. Purcell, J. F. Roddy and J. H. Cooper.

Ewald Iron Company, Louisville, Ky. Represented by S. F. Sullivan, E. V. Shackleford and R. Kilpatrick.

Faessler Manufacturing Company, J., Moberly, Mo.—Boiler makers' tools, expanders, flue cutters, etc. Represented by J. W. Faessler, C. F. Palmer and G. R. Maupin.

Falls Hollow Staybolt Company, Cuyahoga Falls, Ohio—Samples of iron. Represented by John E. Chisholm.

Flannery Bolt Company, Pittsburgh, Pa. Represented by B. E. D. Stafford.

Garratt-Callahan Company, Chicago. Represented by W. G. Willcoxson.

Globe Seamless Steel Tube Company, Chicago—Boiler flues. Represented by Frank J. O'Brien, H. A. Bowles and T. B. Kirby.

Hilles & Jones Company, Wilmington, Del.—Photographs of punches, shears, bending rolls and boiler shop machinery. Represented by W. H. Connell, Jr.

Imperial Brass Manufacturing Company, Chicago—Oxy-acetylene welding and cutting apparatus. Represented by J. A. Schroeder.

Independent Pneumatic Tool Company, Chicago—Pneumatic and electric tools. Represented by H. H. Henricks, H. F. Finney, F. J. Hurley, R. F. Gummere and W. A. Nugent.

Ingersoll-Rand Company, New York—Pneumatic riveting and chipping hammers and drills. Represented by Geo. A. Gallinger, Walter A. Johnson, R. C. Cole, C. F. Overly and E. J. Welsh.

Interstate Commerce Commission—Boilers in operation demonstrating circulation of water. Represented by E. J. Reardon, district inspector locomotive boilers.

- Jacobs-Shupert U. S. Firebox Company, Coatesville, Pa.—Models of Jacobs-Shupert firebox and Lukens iron and steel. Represented by J. H. Smythe and A. W. Whiteford.
- Locomotive Superheater Company, New York—Photographs of superheater. Represented by Geo. Bourne, G. E. Ryder and George Spangler.
- Lovejoy Tool Works, Chicago—Locomotive jack. Represented by W. H. Dangel.
- Mahr Manufacturing Company, Minneapolis, Minn.—No. 15 portable oil burning rivet forge and No. 2 boiler torch. Represented by H. H. Warner and H. B. Hazerodt.
- McCabe Manufacturing Company, Lawrence, Mass.—Pneumatic flanging machine. Represented by F. H. McCabe.
- Monongahela Tube Company, Pittsburgh, Pa. Represented by W. A. Roome.
- Mudge & Company, Chicago—Mudge-Slater spark arrester. Represented by Burton W. Mudge, R. D. Sinclair and G. W. Bender.
- Christopher Murphy & Company, Chicago—Tube cutters and square rib chucks. Represented by Christopher Murphy.
- National Boiler Washing Company, Chicago—Safety First fire door. Represented by H. A. Varney and E. B. White.
- National Railway Devices Company, Chicago—Shoemaker fire door. Represented by V. W. Goodman and J. G. Robinson.
- National Tube Company, Pittsburgh, Pa.—Spellerized lapweld locomotive tubes, Shelby seamless locomotive tubes, Kewanee unions and N. T. C. regrounding valves. Represented by P. J. Conrath, G. N. Riley, E. J. Graham, James Goodwin, L. R. Phillips and J. W. Kelly.
- Never Slip Safety Clamp Company, New York—Never slip safety clamp for handling boiler plate. Represented by E. R. Adler.
- Otis Steel Company, Cleveland. Represented by George E. Sevey.
- Oxweld Railroad Service Company, Chicago—Portable and stationary oxy-acetylene apparatus and specimens of cutting and welding. Represented by C. B. Moore, E. V. Lea, F. C. Hasse, E. S. Richardson, M. R. Day, W. L. Bean, G. H. Pearsall and R. W. Alfonte.
- Parkesburg Iron Company, Parkesburg, Pa.—Charcoal iron boiler tube. Represented by J. A. Kinkead, W. H. S. Bateman and L. P. Mercer.
- Pittsburgh Steel Products Company, Pittsburgh, Pa. Represented by C. R. King.
- Q. & C. Company, New York—Ross-Schofield boiler system. Represented by Charles F. Pierce, E. R. Packer and Alfred Robertson.
- Rome Merchant Iron Mill, Rome, N. Y.—Rome "Superior" staybolt iron. Represented by C. W. Floyd Coffin and Weston Jenkins.
- Ryerson & Son, Jos. T., Chicago—Samples of Ulster special staybolt iron, Ulster engine bolt iron, Nykrome steel tube expanders, high speed drills and small tools. Represented by J. P. Moses, H. S. Smith, H. B. Hench, J. T. Corbett, J. C. Porric and E. T. Hendee.
- Scully Steel & Iron Company, Chicago—Staybolt chucks and headers, expanders, bevel and splitting shears, Everlasting blow-off valves and Draper flue welders. Represented by J. W. Patterson, A. Verschuur and C. L. C. Magee.
- Superior Oxygen Equipment Company, Pittsburgh, Pa.—Oxy-acetylene welding and cutting apparatus. Represented by J. A. Warfel.
- U. S. Graphite Company, Saginaw, Mich.—Mexican boiler graphite. Represented by J. W. Eviston and J. G. Draught.
- Worth Bros. Company, Coatesville, Pa. Represented by B. M. Clements.

Railway Signal Association

The second stated meeting of the Railway Signal Association for the year 1915 was held in the Hotel Astor, New York City, May 26 and 27. President T. S. Stevens, signal engineer, Atchison, Topeka & Santa Fe, presided and about 225 members and guests were in attendance.

At the Wednesday session, Committee III on Power Interlocking, presented specifications for electro-pneumatic interlocking containing numerous revisions of the specifications in the Manual. A revised specification for fiber conduit was presented to provide for different sizes of conduit in addition to the 3 in. size to which the present specifications limit this material. The specifications for incandescent electric lamps, which were referred back to the committee at the last annual convention, were presented again in revised form. The discussion brought out the difficulty which is experienced in getting lamps with the dimensions between the base and the point of concentration of the filament accurate and uniform. This is an important point in light signals, although some of the members did not feel that a reasonable variation in this dimension would particularly affect the service of a lamp with a semaphore signal. These specifications will be presented to the annual convention for final action and letter ballot.

Committee V on Manual Block, submitted a paper on the "Care and Maintenance of Dry Batteries" and instructions governing the maintenance of dry cells, gravity cells and caustic soda cells. These instructions are expected to be presented at the annual meeting for submission to letter ballot. Progress was reported on the preparation of instructions governing the maintenance of storage batteries, but these will probably not be ready to present at the next convention.

The special Committee on Electrical Testing presented a progress report outlining methods of testing electrical signal apparatus and circuits, a large part of which was based on the practice of one large road, and specifying suggested ranges and scales for d. c. testing instruments for use in the field. The

discussion brought out many points as to the need for better testing methods and further development in testing instruments to cover all conditions.

The members of the association in attendance at the meeting were the guests of the Signal Appliance Association on a trip to West Point Wednesday afternoon. The proceedings of the Thursday meetings will be reported hereafter.

American Railroad Master Tinnners', Coppersmiths' and Pipefitters' Association

At the third annual convention of the American Railroad Master Tinnners', Coppersmiths' and Pipefitters' Association to be held at the Sherman House, Chicago, from July 13 to 16, papers will be presented as follows: Autogenous Welding, by W. J. Moffett, C. Borchardt and J. P. Hahn; Tinware, by A. Paulis and J. P. Shoemaker; Crude Oil Burners and Forges, by W. J. Moffett and J. E. Harbough; Locomotive Jackets, by O. E. Schlink, W. W. Nash and T. J. Burke; Lubrication, by C. Borchardt and A. D. Homer; Smoke Prevention, by J. G. Thompson and J. S. Richards; Metals and their Alloys, by G. B. Hosford; Gaskets and their Application to Locomotives, by F. Bucholtz; Coach Heating, by G. Schwenk and F. B. Gralike, and Piping, by W. E. Jones.

Salt Lake City Transportation Club

R. E. Rowland, secretary of the Salt Lake City Transportation Club, has addressed a letter to the various transportation and traffic clubs of the United States, extending to their members the hospitality of the Salt Lake City Transportation Club during any stopovers that may be made in Salt Lake City during the coming summer. The club has appointed a committee for the purpose of arranging special sight-seeing trips, and is prepared to welcome in every way not only single members of the clubs, but also any organizations passing through the city in a body.

Canadian Railway Club

At the thirteenth annual meeting of the Canadian Railway Club officers were elected as follows: President, L. C. Ord; first vice-president, R. M. Hannaford; second vice-president, George Smart; secretary, James Powell, and treasurer, W. H. Stewart. T. C. Hudson, E. E. Lloyd, J. Hendry, C. Manning, E. B. Tilt and Prof. H. O. Keay were appointed on the executive committee, and W. S. Atwood, W. H. Winterrowd and F. A. Purdy on the audit committee.

Engineers' Society of Western Pennsylvania

At the regular meeting of the mechanical section of the Engineers' Society of Western Pennsylvania, to be held in the society rooms in the Oliver building, Pittsburgh, on June 1, a paper will be presented by R. S. Lord, vice-president of the Hope Engineering & Supply Company, Pittsburgh, entitled, "Pipe Couplings."

MEETINGS AND CONVENTIONS

The following list gives the names of secretaries, dates of next or regular meetings, and places of meeting of those associations which will meet during the next three months. The full list of meetings and conventions is published only in the first issue of the Railway Age Gazette for each month.

- AMERICAN ASSOCIATION OF DEMURRAGE OFFICERS.—F. A. Pontious, 455 Grand Central Station, Chicago. Next meeting, July 21, 1915, Milwaukee, Wis.
- AMERICAN RAILROAD MASTER TINNERS', COPPERSMITHS AND PIPEFITTERS' ASSOCIATION.—W. E. Jones, C. & N. W., 3814 Fulton St., Chicago. Annual meeting, July 13-16, 1915, Hotel Sherman, Chicago.
- AMERICAN RAILWAY MASTER MECHANICS' ASSOCIATION.—J. W. Taylor, 1112 Karpen Bldg., Chicago. Annual meeting, June 9-11, 1915, Atlantic City, N. J.
- AMERICAN RAILWAY TOOL FOREMEN'S ASSOCIATION.—Owen D. Kinsey, Illinois Central, Chicago. Annual meeting, July 19-21, 1915, Hotel Sherman, Chicago.
- AMERICAN SOCIETY FOR TESTING MATERIALS.—Prof. E. Marburg, University of Pennsylvania, Philadelphia, Pa. Annual meeting, June 22-26, 1915, Hotel Traymore, Atlantic City, N. J.
- AMERICAN SOCIETY OF CIVIL ENGINEERS.—Chas. Warren Hunt, 220 W. 57th St., New York. Regular meetings, 1st and 3d Wednesday in month, except July and August, 220 W. 57th St., New York.
- AMERICAN SOCIETY OF MECHANICAL ENGINEERS.—Calvin W. Rice, 29 W. 39th St., New York. Next spring meeting, June 22-25, 1915, Buffalo, N. Y. Annual meeting, December 7-10, 1915, New York.
- ASSOCIATION OF RAILWAY ELECTRICAL ENGINEERS.—Jos. A. Andreucetti, C. & N. W., Room 411, C. & N. W. Sta., Chicago. Semi-annual meeting with Master Car Builders' and Master Mechanics' Associations. Annual meeting, October, 1915.

Traffic News

Both houses of the Ohio legislature have passed a bill repealing the state maximum freight rate law.

The Senate of the Illinois legislature has reported unfavorably the bill authorizing the state public utilities commission to increase passenger fares to 2½ cents a mile.

J. B. Ford, assistant general freight agent of the Queen & Crescent, Cincinnati, Ohio, in his latest bulletin, dated May 11, giving information to shippers and others concerning opportunities for business in foreign countries, fills four pages with statements of dates of sailing of vessels to all parts of the world.

The Western Pacific has announced a partial embargo on traffic destined for the Orient and Australia from San Francisco because of the difficulty in obtaining space on ocean steamers. Agents will be authorized to sign bills of lading on shipments for China, Japan, Australia, New Zealand and the Philippine Islands, provided specific bookings can be made.

The Chicago & North Western has announced an amplification of its present passenger train service between Chicago and Denver, to take effect on May 30, when a new train to be called the Denver Special will be put in service, leaving Chicago at 6:05 p. m., and arriving at Denver at about 9:00 p. m. the next day. Similar service will be established eastbound. This service is in addition to the Colorado Special and the Colorado Express.

A change in passenger train schedules was put in effect on the Baltimore & Ohio on Sunday, May 23, by which the running time of the Interstate Special between Chicago and Washington is reduced by two hours, and train No. 8, from Baltimore to Chicago, is operated by way of Wheeling, W. Va., instead of from Baltimore to Pittsburgh. This train will be known as the West Virginian. Trains No. 9 and 10, which for the past few months have been operated between New York and Pittsburgh, are restored to the old runs between New York and Chicago.

A Novel Railroad Exhibit

The Denver & Rio Grande, the Western Pacific, the Missouri Pacific and the St. Louis, Iron Mountain & Southern have an interesting exhibit at the Panama-Pacific Exposition in San Francisco, consisting of a globe 51 ft. in diameter, on the outside surface of which is shown a relief map of North America with tracks running across it representing the main lines of these roads from St. Louis to San Francisco, on which trains are run back and forth by means of electrical apparatus contained within the globe. The lower part of the globe is cut off so that it stands 44 ft. high. It is supported by a series of arches through which visitors may enter the interior. Between the arches are large sculptured figures about 8 ft. high, representing a brakeman, a farmer, a fisherman, a miner, and representatives of other industries, each standing on a pedestal representing the front part of a locomotive, about 10 ft. high. On the interior of the globe are artistic reproductions of western scenery, such as the Royal Gorge, and model views of Denver, Salt Lake City, Leadville and other cities along the lines. Adjoining the globe is an annex, at the top of which is a replica of Marshall Pass. As the trains cross the continent the names of the principal cities are flashed electrically on the map as the train passes through.

National Industrial Traffic League

At the spring meeting of the National Industrial Traffic League, held at Memphis, Tenn., on April 13 and 14, the Tariff Committee was instructed to formulate a resolution to be sent to the Interstate Commerce Commission, recommending a rule that no other fraction than ¼ cent be considered in publishing freight rates. This subject arose from the fact that the recent

- ASSOCIATION OF RAILWAY TELEGRAPH SUPERINTENDENTS.—P. W. Drew, Soo Line, 112 West Adams St., Chicago. Annual meeting, June 22-25, 1915, Rochester, N. Y.
- ASSOCIATION OF TRANSPORTATION AND CAR ACCOUNTING OFFICERS.—G. P. Conrad, 75 Church St., New York. Next meeting, June 22-23, Niagara Falls, N. Y.
- CANADIAN RAILWAY CLUB.—James Powell, Grand Trunk, P. O. Box 7, St. Lambert (near Montreal), Que. Regular meetings, 2d Tuesday in month, except June, July and August, Windsor Hotel, Montreal, Que.
- CAR FOREMEN'S ASSOCIATION OF CHICAGO.—Aaron Kline, 841 North Lawler Ave., Chicago. Regular meetings, 2d Monday in month, except June, July and August, Hotel La Salle, Chicago.
- CENTRAL RAILWAY CLUB.—H. D. Vought, 95 Liberty St., New York. Regular meetings, 2d Friday in January, May, September and November. Annual meeting, 2d Thursday in March, Hotel Statler, Buffalo, N. Y.
- ENGINEERS' SOCIETY OF WESTERN PENNSYLVANIA.—Elmer K. Hiles, 2511 Oliver Bldg., Pittsburgh, Pa. Regular meetings, 1st and 3d Tuesday in month, Pittsburgh.
- FREIGHT CLAIM ASSOCIATION.—Warren P. Taylor, R. F. & P., Richmond, Va. Annual meeting, June 16, 1915, Chicago.
- GENERAL SUPERINTENDENTS' ASSOCIATION OF CHICAGO.—A. M. Hunter, 321 Grand Central Station, Chicago. Regular meetings, Wednesday, preceding 3d Thursday in month, Room 1856, Transportation Bldg., Chicago.
- INTERNATIONAL RAILWAY GENERAL FOREMEN'S ASSOCIATION.—Wm. Hall, 1126 W. Broadway, Winona, Minn. Next convention, July 13-16, 1915, Sherman House, Chicago.
- MASTER BOILER MAKERS' ASSOCIATION.—Harry D. Vought, 95 Liberty St., New York. Annual convention, May 25 to 28, 1915, Chicago, Ill.
- MASTER CAR BUILDERS' ASSOCIATION.—J. W. Taylor, 1112 Karpen Bldg., Chicago. Annual meeting, June 14-16, 1915, Atlantic City, N. J.
- NEW ENGLAND RAILROAD CLUB.—W. E. Cade, Jr., 683 Atlantic Ave., Boston, Mass. Regular meetings, 2d Tuesday in month, except June, July, August and September, Boston.
- NEW YORK RAILROAD CLUB.—Harry D. Vought, 95 Liberty St., New York. Regular meetings, 3d Friday in month, except June, July and August, 29 W. 39th St., New York.
- NIAGARA FRONTIER CAR MEN'S ASSOCIATION.—E. N. Frankenberger, 623 Brisbane Bldg., Buffalo, N. Y. Meetings, 3d Wednesday in month, New York Telephone Bldg., Buffalo, N. Y.
- PEORIA ASSOCIATION OF RAILROAD OFFICERS.—M. W. Rotchford, 410 Masonic Temple Bldg., Peoria, Ill. Regular meetings, 3d Thursday in month, Jefferson Hotel, Peoria.
- RAILROAD CLUB OF KANSAS CITY.—Claude Manlove, 1008 Walnut St., Kansas City, Mo. Regular meetings, 3d Saturday in month, Kansas City.
- RAILROAD MEN'S IMPROVEMENT SOCIETY.—J. B. Curran, Erie R. R., 50 Church St., New York. Meetings, alternate Thursdays, October to May, Assembly Rooms of Trunk Line Association, 143 Liberty St., New York.
- RAILWAY CLUB OF PITTSBURGH.—J. B. Anderson, Room 207, P. R. R. Sta., Pittsburgh, Pa. Regular meetings, 4th Friday in month, except June, July and August, Monongahela House, Pittsburgh.
- RAILWAY ELECTRICAL SUPPLY MANUFACTURERS' ASSOCIATION.—J. Scribner, 1063 Monadnock Block, Chicago. Meetings with Association of Railway Electrical Engineers.
- RAILWAY SIGNAL ASSOCIATION.—C. C. Rosenberg, Myers Bldg., Bethlehem, Pa. Stated meeting, May 26-27, 1915, Hotel Astor, New York. Annual meeting, September 14-17, 1915, Salt Lake City, Utah.
- RAILWAY SUPPLY MANUFACTURERS' ASSOCIATION.—J. D. Conway, 2136 Oliver Bldg., Pittsburgh, Pa. Meetings with Master Car Builders and Master Mechanics' Associations.
- RAILWAY TELEGRAPH AND TELEPHONE APPLIANCE ASSOCIATION.—G. A. Nelson, 50 Church St., New York. Meetings with Association of Railway Telegraph Superintendents.
- RICHMOND RAILROAD CLUB.—F. O. Robinson, C. & O., Richmond, Va. Regular meetings, 2d Monday in month, except June, July and August.
- ST. LOUIS RAILWAY CLUB.—B. W. Frauenthal, Union Station, St. Louis, Mo. Regular meetings, 2d Friday in month, except June, July and August, St. Louis.
- SALT LAKE TRANSPORTATION CLUB.—R. E. Rowland, David Keith Bldg., Salt Lake City, Utah. Regular meetings, 1st Saturday of each month, Salt Lake City.
- SOUTHERN ASSOCIATION OF CAR SERVICE OFFICERS.—E. W. Sandwich, A. & W. P. R. R., Atlanta, Ga. Next meeting, July 15, 1915, Atlanta. Annual meeting, January, 1916.
- SOUTHERN & SOUTHWESTERN RAILWAY CLUB.—A. J. Merrill, Grant Bldg., Atlanta, Ga. Regular meetings, 3d Thursday, January, March, May, July, September, November, 10 a. m., Piedmont Hotel, Atlanta.
- TOLEDO TRANSPORTATION CLUB.—Harry S. Fox, Toledo, Ohio. Regular meetings, 1st Saturday in month, Boody House, Toledo.
- TRAFFIC CLUB OF CHICAGO.—W. H. Wharton, La Salle Hotel, Chicago.
- TRAFFIC CLUB OF JACKSONVILLE (FLA.).—R. H. May, Jacksonville, Fla. Meetings, 1st Saturday in month.
- TRAFFIC CLUB OF ST. LOUIS.—A. F. Versen, Mercantile Library Bldg., St. Louis, Mo. Annual meeting in November. Noonday meetings, October to May.
- TRAFFIC CLUB OF NEWARK.—John J. Kautzmann, P. O. Box 238, Newark, N. J. Regular meetings, 1st Monday in month, except July and August, The Washington, 559 Broad St., Newark.
- TRAFFIC CLUB OF NEW YORK.—C. A. Swope, 291 Broadway, New York. Regular meetings last Tuesday in month, except June, July and August, Hotel Astor, New York.
- TRAFFIC CLUB OF PITTSBURGH.—D. L. Wells, Gen. Agt., Erie R. R., 1924 Oliver Bldg., Pittsburgh, Pa. Meetings bi-monthly, Pittsburgh. Annual meetings, 2d Monday in June.
- TRAIN DISPATCHERS' ASSOCIATION OF AMERICA.—J. F. Mackie, 7122 Stewart Ave., Chicago. Annual meeting, June 15, 1915, Minneapolis, Minn.
- TRANSPORTATION CLUB OF DETROIT.—W. R. Hurley, Superintendent's office, N. Y. C. R. R., Detroit, Mich. Meetings monthly, Normandie Hotel, Detroit.
- UTAH SOCIETY OF ENGINEERS.—Frank W. Moore, 1111 Newhouse Bldg., Salt Lake City, Utah. Regular meetings, 3d Friday in month, except July and August, Salt Lake City.
- WESTERN CANADA RAILWAY CLUB.—L. Kon, Immigration Agent, Grand Trunk Pacific, Winnipeg, Man. Regular meetings, 2d Monday, except June, July and August, Winnipeg.
- WESTERN RAILWAY CLUB.—J. W. Taylor, 1112 Karpen Bldg., Chicago. Regular meetings, 3d Tuesday afternoon in month, except June, July and August, La Salle Hotel, Chicago.
- WESTERN SOCIETY OF ENGINEERS.—J. H. Warder, 1735 Monadnock Block, Chicago. Regular meetings, 1st Monday in month, except January, July and August, Chicago. Extra meetings, except in July and August, generally on other Monday evenings. Annual meetings, 1st Wednesday after 1st Thursday in January, Chicago.

decision of the Interstate Commerce Commission allowing a 5 per cent advance in freight rates in Official Classification Territory resulted in a large number of rates containing decimal fractions, which are inconvenient to handle. The plan of requesting the railroads in Central Freight Association and Trunk Line territory to publish association tariffs was also discussed, and the Committee on Simplification of Tariffs was instructed to circularize members of the league and other shippers, asking for suggestions for a basis of simplifying freight tariffs.

The Committee on Transportation Instrumentalities presented a report on the subject of pooling freight cars, including a discussion of the plan adopted by a number of lines in Texas providing for joint use of cars on an equalization basis, and it was recommended that the railroads take steps toward the pooling of cars by adopting some such plan in other territory. It was expressed as the sense of the league, however, that the term "free interchange" is preferable to "pooling." After discussion of a request from a sub-committee of the American Railway Association Committee on Standard Box Cars, asking for suggestions from the shippers, it was decided that while the league was in favor of standardization of cars it should take no position toward determining what the standards should be. There was considerable discussion of the new M. C. B. rules for the protection of car doors, in which the opinion was expressed that while the shippers ought to make carload shipments safe, they should not be required to pay for this additional protection. The Committee on Unit Basis of Classification reported that the Western Classification Committee was using such a basis in some cases, but not using it in others. The committee felt that the system used ought to be revised or else dropped; and the committee was instructed to consider the matter further, reporting at the next meeting whether a feasible and practical unit basis for classification could be adopted.

New Uniform Bill of Lading

C. C. McCain, chairman of the Uniform Bill of Lading Committee for all the roads east of Chicago and north of the Ohio river has issued a circular giving the form of section 3 which hereafter is to be inserted in bills of lading to make them conformable to the Cummins amendment forbidding railroads to limit their liability for loss and damage below the actual value of the goods, which amendment goes into effect June 2. The new section 3 is as follows:

SEC. 3. No carrier is bound to transport said property by any particular train or vessel, or in time for any particular market or otherwise than with reasonable despatch, unless by specific agreement indorsed hereon. Every carrier shall have the right in case of physical necessity to forward said property by any railroad or route between the point of shipment and the point of destination; but if such diversion shall be from a rail to a water route the liability of the carrier shall be the same as though the entire carriage were by rail.

The amount of any loss or damage for which any carrier is liable shall be computed on the basis of the value of the property at the place and time of shipment under this bill of lading.

Except in cases where the loss, damage, or injury complained of is due to delay or damage while being loaded or unloaded, or damaged in transit by carelessness or negligence, claims must be made in writing to the carrier at the point of delivery or at the point of origin within four months after delivery of the property, or, in case of failure to make delivery, then within four months after a reasonable time for delivery has elapsed. Suits for recovery of claims for loss or damage, notice of which is not required, and which are not made in writing to the carrier within four months as above specified, shall be instituted only within two years after delivery of the property, or, in case of failure to make delivery, then within two years after a reasonable time for delivery has elapsed. No claims not in suit will be paid after the lapse of two years as above, unless made in writing to the carrier within four months as above specified.

Any carrier or party liable on account of loss of or damage to any of said property shall have the full benefit of any insurance that may have been effected upon or on account of said property, so far as this shall not void the policies or contracts of insurance.

As the question of just what ought to be done to comply in all respects with the Cummins amendment is still pending before the Interstate Commerce Commission, Mr. McCain suggests that it may not be best to print large numbers of the new form at present and calls attention to the fact that old forms may be made legal by stamping on them a declaration saying that section 3 is subject to the amendment, as above set forth, which amendment is printed in Supplement No. 18, to the Official Classification, which is to take effect June 2.

Commission and Court News

INTERSTATE COMMERCE COMMISSION

A hearing will be held before Examiner Burnside in New York on July 12 relative to the reasonableness of certain tariffs of the Erie proposing increased ferry charges between New York and Jersey City.

Examiner Bell held a hearing at Chicago on May 19 and 20, on tariffs filed by the western railroads which have been suspended by the commission, abolishing the stopping of cars in transit to complete loading or for partial unloading on shipments moving under through rates. Representatives of the packers opposed the change, saying that the present system is no hindrance to the railroads.

The commission has suspended from May 15 and subsequent dates to September 21 tariffs of various carriers in official classification territory proposing to cancel the existing commodity rates on paper and commodities taking the same rates, including wrapping, printing, writing and newsprint paper, boxboard, binder board, strawboard, building and roofing paper and roofing composition in carloads between various points throughout that territory. If such commodity rates are cancelled, as a general rule, class rates will apply.

The Interstate Commerce Commission has set June 1 as the date for a continuation of the hearing begun at Washington on May 17, on advanced ratings carried in Supplement No. 9 of the Official Classification, which have been suspended by the commission, although there is a prospect that the hearing will be adjourned to a still later date. The principal changes involve higher ratings on beer in carloads, tobacco, paper, paper stock and other articles, which are included in the list of commodities named in the first report of the Interstate Commerce Commission in the five per cent rate case, in which the commission suggested that the car mile revenues appeared to be so low as to suggest the advisability of carefully examining them to ascertain whether additions to the revenues might not be made by increasing rates on those commodities rather than by a horizontal advance in all rates. R. N. Collyer, chairman of the Official Classification Committee, was the principal witness for the railroads, and a number of representatives of the shippers testified in opposition to the changes in rating.

Rates on Cotton Piece Goods from North Adams, Mass.

In re rates on cotton piece goods from North Adams, Mass., and other points to New York and other points. Opinion by the commission:

The commission finds that the carriers have justified proposed increased rates on cotton piece goods and woolen piece goods from North Adams, Mass., and other points on the Boston & Maine and Boston & Albany to New York and other points. (34 I. C. C., 41.)

Rates to Freeport and Rockford, Ill.

Chamber of Commerce of Freeport, Ill., v. Chicago, Milwaukee & St. Paul, et al. Opinion by Commissioner Meyer:

The commission finds that the present class rates between Freeport and Rockford and points in central freight association trunk line and New England territories are discriminatory, and that the Rockford rates in addition are unreasonable. With the rates in effect at the upper Mississippi river crossings fixed upon approximately a 117 per cent basis, and at Peoria upon 110 per cent basis, the commission believes that the rates at Freeport should be 114 per cent, and at Rockford 112 per cent, an adjustment which will give Freeport an 89.8 cent scale to and from New York and Rockford an 88.3 cent scale. This determination is not an extension of the McGraham scale to Freeport and Rockford, and the bases prescribed are slightly higher than the ratio between the distances Freeport and Rockford to New York and the Chicago-New York distance. (33 I. C. C., 673.)

Rates on Grain and Grain Products

In re rates on grain and grain products from Topeka, Kan., Kansas City, Mo., and other points to Dubuque, Ia., and other points. Opinion by Commissioner Hall:

The commission finds that the carriers have justified proposed increased joint through rates on grain and grain products from stations in Kansas and other states to points in Iowa, published to correct rates published in error. The carriers have also justified a proposed cancellation of joint through rates on grain and grain products from stations in Kansas and other states to points in Wisconsin, leaving in effect combinations of local rates on the Missouri river. (33 I. C. C., 666.)

Rates on Coke from Georgia Points

Durham Coal & Iron Company et al. v Central of Georgia et al. Opinion by Commissioner Hall:

The commission finds that the rate on coke in carloads from Durham and Chickamauga, Ga., to Pacific coast terminals is discriminatory and prejudicial to the extent that it exceeds the rate contemporaneously in effect to the same points from the Birmingham, Ala., district. It is also found that to apply the minimum carload weight is unreasonable when the cars in which the shipments are made are too small to carry that weight. Tariffs should provide that in such cases the marked capacity of the car used will govern. (34 I. C. C., 10.)

Joint Rates With the Kansas City Missouri River Navigation Company

Kansas City Missouri River Navigation Company v. Chesapeake & Ohio et al. Opinion by Commissioner Clark:

The commission finds that the carriers should establish through routes and joint rates on grain and grain products from Kansas City to Norfolk and Newport News, Va., for export, with the complainant, a water line operating on the Missouri and Mississippi rivers between Kansas City and East St. Louis. It is also held that if defendants engage in the practice of exchanging bills of lading they discriminate against complainant in refusing like recognition to its bills of lading. (34 I. C. C., 67.)

Joint Rates With Stone's Express

Stone's Express, Inc. v. Boston & Maine et al. Opinion by Commissioner Clark:

Stone's Express, conducting an express and freight service, the latter under the name of the Lynn & Boston line, by means of a barge and tug service between Lynn and Boston, Mass., is awarded in this case joint rates with a number of other carriers, not including the Boston & Maine, which is the only one of them also serving Lynn. Such joint rates will apply only on freight shipments to and from petitioners' terminal at Lynn, and if the express company continues to perform any team service in connection with such shipments, no part of it may be included in the joint rates. Some 160 rail and water carriers are affected, including the Boston & Albany; the New York, New Haven & Hartford; the Metropolitan Steamship Company and the Merchants & Miners Transportation Company. (33 I. C. C., 638.)

Railway Ownership of Boat Lines

The commission in a number of decisions written by Commissioner McChord has granted the petitions of several carriers to retain their interest in various boat lines. They are as follows: The Pennsylvania Company and the Canadian Pacific are each allowed to retain a one-third interest in the Pennsylvania-Ontario Transportation Company, which owns and operates a car ferry on Lake Erie between Ashtabula, Ohio, and Port Burwell, Canada. (34 I. C. C., 47.)

The Grand Trunk Western may continue its interest in the Grand Trunk Milwaukee Car Ferry operated by the Detroit, Grand Haven & Milwaukee (controlled by the Grand Trunk Railway of Canada), between Grand Haven, Mich., and Milwaukee. (34 I. C. C., 54.)

The Grand Trunk Railway of Canada and the Buffalo, Rochester & Pittsburgh are each allowed to retain their interest in the Ontario Car Ferry Company, Ltd., which operates the Ontario No. 1, a car ferry and passenger vessel plying between Genesee Dock, N. Y., and Cobourg, Ont., connecting the terminus of the Buffalo, Rochester & Pittsburgh at Genesee Dock with the termi-

nus of the Grand Trunk Railway of Canada at Cobourg. A similar boat, the Ontario No. 2, is now under construction. (34 I. C. C., 49 and 52.)

The Ann Arbor may continue to operate its three car-ferry boats from its terminus at Frankfort to the ports of Manistique, where cars are delivered to and received from the Soo line and the Manistique & Superior; Menominee, where deliveries are made to the Chicago, Milwaukee & St. Paul, and the Chicago & North Western; Kewaunee, where connection is made with the Green Bay & Western and, over that line, with the Chicago, Milwaukee & St. Paul; and Manitowoc, where cars are interchanged with the Chicago & North Western and the Soo line roads; all on the west shore of Lake Michigan. (34 I. C. C., 83.)

The Pere Marquette is allowed to continue the operation of its ferries on the Detroit river between Detroit, Mich., and Windsor, Ont., on the St. Clair river between Port Huron, Mich., and Sarnia, Ont., and on Lake Michigan. This road and the Bessemer & Lake Erie are each allowed to continue their interest in the Marquette & Bessemer Dock & Navigation Company, operating a car-ferry on Lake Erie between Conneaut, Ohio and Port Stanley, Ont. (34 I. C. C., 86.)

In each case it is held that the participation of the petitioner (or petitioners) in through all-rail routes between the ports served by the boat line in which it is interested makes it possible for it to compete with such line within the meaning of section 5 of the act as amended by the Panama Canal act. It is also held in each case that the facts support a finding that the existing service by water is being operated in the interest of the public and is of advantage to the convenience and commerce of the people and that an extension of the petitioner's interest is of advantage to the convenience and commerce of the people, and that a continuance will neither exclude, prevent nor reduce competition on the route by water under consideration.

Rates on Vegetables from New Orleans to Chicago

New Orleans Vegetable Growers, Merchants & Shippers' Association v. Illinois Central et al. Opinion by the commission:

The commission finds that the present rates and minimum weights on cucumbers, cabbage, potatoes, beets, beans and vegetables of the lettuce family, moving in carloads from New Orleans, La., to Chicago and other northern markets are not unreasonable. The commission, however, directs complete revision of defendants' schedules of estimated weights applying on such shipments as it appears that the present system is unlawful.

Rates on vegetables from New Orleans to Kansas City and to Buffalo-Pittsburgh territory are found to be discriminatory to the extent that they exceed by more than five cents a 100 lb., the rates contemporaneously maintained from Southport Junction, La. (34 I. C. C., 32.)

STATE COMMISSIONS

The Missouri Public Service Commission has completed the taking of testimony on the application of the railroads of the state for authority to make an increase in passenger fares. R. A. Knapp, president of the United Commercial Travelers of Missouri, protested against any increase in fares and complained of the number of passes issued by the railroads. It turned out, however, that the passes of which he was complaining were those given to railroad employees. S. C. Bates, secretary of the Manufacturers' & Jobbers' Association of Springfield, Mo., told the commission that his organization favors an increase in fares provided the railroads will restore their train service to what it was before the two-cent fare law became effective.

The Pennsylvania Public Service Commission has issued its decision on the long-pending complaint of people in Philadelphia in relation to the increases in suburban passenger fares made by the railroads entering that city several months ago. The principal controversy was concerning one hundred-trip tickets on which the railroads made a large advance in price. The commission recommends that for distances of more than eight miles the present maximum rate, 1½ cents a mile be reduced on a sliding scale, the rate to decrease as the distance increases. It is recommended that these tickets be made good for one year instead of six months. The commission refuses to grant the complainants a further hearing, and they say that they will at once prepare a new case with a view to presenting their grievance even more urgently than before.

PERSONNEL OF COMMISSIONS

The seven men nominated for the Pennsylvania Public Service Commission last week (*Railway Age Gazette*, May 21, p. 1095) were confirmed on May 20 and will organize June 1. Local newspapers speak of "the new commission," but the change is simply one of personnel. The first appointments under the act creating the commission were made in 1913 after the Senate of 1913 had adjourned. The law requires confirmation by the Senate. The next Senate met in January, 1915. When it met there was also a new state administration and the appointments made by Governor Tener in 1913 were not confirmed, this postponement being made out of courtesy to the new governor, Dr. Brumbaugh. Governor Brumbaugh withdrew all of Governor Tener's appointments, saying that he wanted a wholly new commission. But the commissioners named in 1913 held office until their successors were named and confirmed. The governor appointed two of the former commissioners. Next week he will designate a chairman, and officers will be elected. There is pending a bill to allow the commission to have testimony taken by masters anywhere in the state and to simplifying appeals.

COURT NEWS

Arguments in the injunction proceedings instituted by the Ann Arbor to restrain the enforcement of the Michigan two-cents-a-mile passenger rate were heard before the three judges of the United States District Court at Grand Rapids, Mich., on May 19.

The St. Louis & San Francisco and the Kansas City Southern were granted a temporary injunction by the United States District Court at Little Rock, Ark., on May 19, restraining the Arkansas Railroad Commission from enforcing its general freight tariff which was to become effective on May 20. Hearing on the petition for a permanent injunction was set for May 28. The railroads contended the tariff would be confiscatory.

In the federal court at Cleveland, Ohio, May 26, the grand jury returned indictments against the Delaware & Hudson and the Erie railroads and F. D. Underwood, president of the Erie, for making in 1912 illegal reductions in fares of passengers in a private car furnished for W. B. Miller, secretary of the Diamond Rubber Company, of Akron, Ohio, and seven friends, for a trip from Akron to Beverly, Mass. The indictment charges that on July 2, 1912, the trip was made and that instead of charging 25 full fares for the car, as provided in the tariff, Mr. Underwood and the indicted railroads let Mr. Miller and his friends have the private car for eight fares.

Delivered Shipment—Destruction By Fire

The Nebraska Supreme Court holds that when a railroad company has transported freight to destination, has notified the consignee of arrival, and given him permission to unload; and the consignee has broken the seal, locking the door with his own lock, and retained the key, and later a fire occurs in the car, the company is not liable, and it is error for the court to submit to the jury the question of liability, negligence being neither alleged nor shown. *McEntire v. Chicago, R. I. & P. (Neb.)*, 152 N. W., 305.

Lightning Stroke—Workmen's Compensation Acts

A railroad track laborer was killed by a stroke of lightning while he was in a barn in which he had taken refuge from a storm at the direction of his foreman. The Michigan Supreme Court holds that his death did not result from an "injury arising out of and in the course of his employment," since there was nothing in his employment that rendered him particularly liable to lightning strokes. There could, therefore, be no recovery for his death under the Workmen's Compensation Act. This is in line with rulings in similar cases by the English and Wisconsin courts under like statutory provisions. Except in cases where the employment necessarily placed the employee at the time of his injury in a position subjecting him to unusual risk from lightning, compensation has been denied. *Klawinski v. Lake Shore & M. S. (Mich.)*, 152 N. W., 213.

Railway Officers

Executive, Financial, Legal and Accounting

J. L. Lancaster, president of the Memphis Union Station Company, Memphis, Tenn., has been appointed assistant to the vice-president and general manager of the Texas & Pacific, with headquarters at New Orleans, La.

Edward A. Haid, assistant general attorney of the St. Louis Southwestern, has been appointed general attorney, with headquarters at St. Louis, Mo. Samuel H. West has resigned as general solicitor and the office has been abolished.

W. S. Trowbridge, assistant auditor of the Boston & Albany at Boston, Mass., has been appointed auditor, with headquarters at Boston, succeeding W. A. Cormier, who has been assigned to other duties at his own request. W. J. Turck, auditor of freight accounts at Boston, has been appointed assistant auditor, with headquarters at Boston, succeeding Mr. Trowbridge, and Christian Petersen has been appointed auditor of freight accounts, succeeding Mr. Turck, effective June 1.

W. R. Holt, paymaster of the Boston & Albany Railroad at Boston, Mass., has been appointed cashier, succeeding Frank H. Ratcliffe, who has retired as cashier under the pension rules of the New York Central. Mr. Ratcliffe is 70 years old and has been in the continuous service of the Boston & Albany and its predecessors for more than 50 years. He remains as treasurer of the Boston & Albany Railroad Company, with headquarters at Boston, Mass.

C. O. Jenks, general manager of the Spokane, Portland & Seattle at Portland, Ore., has been elected also a member of the board of directors and vice-president and general manager of the Spokane & Inland Empire, succeeding W. D. Scott, deceased. He has been elected also vice-president and general manager of the Pacific & Eastern, with jurisdiction over the operating, mechanical and purchasing departments, succeeding William Gerig, resigned, and vice-president of the Oregon Electric.

Operating

W. R. Armstrong, assistant general manager and chief engineer of the Salt Lake & Utah at Salt Lake City, Utah, has been appointed general manager and chief engineer.

Traffic

Arthur T. Jackson has been appointed district passenger agent of the Union Pacific System, with headquarters at Los Angeles, Cal. Mr. Jackson will take his new position on June 1.

H. H. Taylor, commercial agent of the Texas & Pacific at Kansas City, Mo., has been transferred to Chicago, succeeding James Stuart, transferred to Texas. P. B. Doddridge, commercial agent at Denver, Colo., has been transferred to Kansas City, succeeding Mr. Taylor. A. T. Pratt, commercial agent at Birmingham, Ala., has been transferred to Denver, succeeding Mr. Doddridge. O. E. Duggan, traveling freight agent at Chicago, has been appointed commercial agent at Birmingham, Ala., succeeding Mr. Pratt.

Engineering and Rolling Stock

P. H. McFadden has been appointed roadmaster of the First district, of the Oregon-Washington Railroad & Navigation Company, with headquarters at Spokane, Wash., vice J. Mohr, assigned to other duties.

J. A. Mitchell, locomotive foreman of the Grand Trunk Pacific at Biggar, Sask., has been appointed general foreman at the Transcona, Man., shops, and A. McTavish, locomotive inspector at Transcona, has been appointed locomotive foreman at Biggar.

OBITUARY

John Sullivan, roadmaster of the Chicago, Burlington & Quincy, at Galesburg, Ill., died at Galesburg on May 20, at the age of 73 years. He had been employed by the Burlington for 58 years, starting in 1857 as a section hand, and had been road-

master of a single main line division, the Aurora division, since 1869.

H. E. Howard, formerly and for many years an officer of the Connecticut River and later of its successor, the Boston & Maine, died at his home in Springfield, Mass., May 24, at the age of 77. He was general freight agent of the Connecticut River from 1870 until 1891, when he was promoted to the position of general traffic manager of the company, including its northern connections. In 1893, on the lease of the road to the Boston & Maine, he was made superintendent, and a year later became superintendent of car service for the Boston & Maine System. He held this position until 1908, when he retired from railroad service.

General Thomas H. Hubbard, chairman of the executive committee of the Toledo, St. Louis & Western, whose death on May 19, at his home in New York, was noted in these columns last week, was born at Hallowell, Me., on December 20, 1838. He graduated from Bowdoin College, attended Albany Law School, and was admitted to the bar in 1860. He served with distinction in the civil war, and subsequently became a prominent railroad corporation lawyer in New York. He was vice-president and a director of the Southern Pacific from 1896, to 1900; president of the Mexican International from 1897, to 1901, also of the Houston & Texas Central from 1894, to 1901, and later served as president of the Guatemala Central, director and chairman of the executive committee of the Chicago & Alton, and the Toledo, St. Louis & Western, and also of the American Light & Traction Company. He had been a director and member of the executive committee of the Wabash Railroad, and the Western Union Telegraph Company, also a director of the Philippine Railway Company and of a number of other corporations. A few days before his death he again became a director of the Southern Pacific. He was a trustee of Bowdoin College and made it large gifts.



T. H. Hubbard

COAL IN GERMANY.—Reports from the Rhenish-Westphalian coal-mining district state that it has not been possible to increase the production of coal to any material extent. Extra shifts do not counteract the effect of calling up further instalments of skilled hands. Under these circumstances, it has caused considerable satisfaction that the Department for War, after negotiations with leading coal-mining circles, has decided to allow a fair number of the miners thus called up to return on leave for some fixed time, so as to effect an increase in the production. This step will, it is stated, be taken promptly, and hopes are expressed that the much-longed-for increase in the production will then ensue. In spite of the rise of prices, which came into operation on April 1, there seems to be no falling-off in the demand, rather the contrary. The advent of warmer weather is not expected to make any difference in this respect. The large stocks at the Upper Rhine, and although in South Germany, are almost exhausted, which circumstance, coupled with the uncertainty as to a possible rise in prices from September 1, is likely to produce an active market during the summer. The increased demand for coke, which may now amount to about half the allotment figure, is attributed to the continued increase in the activity of the iron industry. A number of blast-furnaces and other iron industries have recently again been set going, which, of course, means a greater demand for coke. The negotiations about the renewal of the Rhenish-Westphalian Coal Syndicate have led to the acceptance of a draft agreement by the majority of all mines.—*Engineering.*

Equipment and Supplies

LOCOMOTIVE BUILDING

THE HAVANA CENTRAL is in the market for 6 Consolidation type locomotives.

THE ROBY & NORTHERN, Roby, Tex., is inquiring for a number of locomotives.

THE TEXAS & PACIFIC is in the market for 10 switching and 6 freight locomotives.

THE NEW YORK, ONTARIO & WESTERN is in the market for 12 Santa Fe type locomotives.

THE WILMINGTON, BRUNSWICK & SOUTHERN is reported to have ordered 1 locomotive from the Georgia Car & Locomotive Company.

FORT WORTH & DENVER CITY.—The orders for locomotives and cars reported in the *Railway Age Gazette* of May 14 as having been placed by this company with the Baldwin Locomotive Works and the Haskell & Barker Car Company, respectively, should not have been reported as new orders. These locomotives and cars were but parts of orders placed by the Chicago, Burlington & Quincy, reported in the issues of February 26 and March 12.

CAR BUILDING

FORT WORTH & DENVER CITY. See item under Locomotive Building.

THE ROBY & NORTHERN, Roby, Tex., is inquiring for a number of cars.

THE NEW YORK, ONTARIO & WESTERN will build 20 caboose cars in its own shops.

THE NORFOLK & WESTERN is reported to be contemplating the purchase of 1,000 box cars.

THE DETROIT, TOLEDO & IRONTON is in the market for 200 40-ft. 40-ton steel underframe box cars.

THE NORTHERN PACIFIC is in the market for 750 center sill structures and 1,500 sets of draft sills.

THE LONG ISLAND has ordered 100 steel underframe box (XI) cars from the Pressed Steel Car Company.

THE CHESAPEAKE & OHIO has ordered 700 steel underframe 30-ton box cars from the Central Locomotive and Car Works.

THE HAVANA CENTRAL is inquiring for 500 20-ton and 50 30-ton flat cars, 100 30-ton box cars and 10 30-ton caboose cars.

THE WILMINGTON, BRUNSWICK & SOUTHERN is reported to have ordered 5 cars from the Georgia Car & Locomotive Company.

THE WESTERN MARYLAND's inquiry for passenger cars includes 4 baggage cars, 8 coaches, 2 cafe-parlor observation cars and 1 parlor-buffet car.

THE LEHIGH VALLEY will repair 2,000 box cars and has divided the work between the American Car & Foundry Company and the Standard Steel Car Company.

THE RUSSIAN GOVERNMENT is negotiating with the Pullman Company for the purchase of 40,000 freight cars. These cars, if purchased, will be built according to American standards except as to gage, couplings and wheels. The gage will be the broad gage of the Russian railways and the couplings and wheels will also be according to Russian standards. This order may be closed this week.

THE PENNSYLVANIA LINES have placed orders for 189 passenger cars as follows: Pressed Steel Car Company, 47, including 10 coaches (P70), 8 combination passenger and baggage cars (PB70) and 5 baggage cars (B74a) for the Lines East, and 14 coaches (P70), 4 combination passenger and baggage cars

(PB70) and 6 dining cars (D78) for the Lines West; Standard Steel Car Company, 39, including 20 coaches (P70) and 12 combination cars (PB70) for the Lines East and 7 baggage cars (B60a) for the Lines West; American Car & Foundry Company, 20 coaches (P70) for the Lines East; J. G. Brill Company, 15 baggage cars (B60) for the Lines East; Pullman Company, 12 baggage and mail cars (BM70e) for the Lines West, and the Altoona shops, 56, including 14 passenger, baggage and mail cars and 42 baggage and mail cars for the Lines East. The order is thus divided 146 cars for the Lines East and 43 for the Lines West. With the completion of these cars the Pennsylvania System will have in the passenger service on its lines 3,823 all-steel cars, 593 of this number being all-steel Pullman cars. The Pennsylvania began substituting steel cars for wooden equipment in 1906, when it was announced that in the future all passenger cars built or ordered would be of all-steel construction. The total number of passenger cars on the system at the present time is 6,869, so that when the cars that have just been ordered have been delivered, more than half of all the passenger equipment used on all of the 11,991 miles of railroad of the system, will be of all-steel construction. This number, 3,283 cars, is almost one-third of all the steel passenger cars in the United States.

IRON AND STEEL

THE BALTIMORE & OHIO has ordered 1,800 tons of rails from the Illinois Steel Company.

THE MISSOURI, KANSAS & TEXAS has ordered 1,200 tons of steel from the Illinois Steel Company.

THE SOUTHERN PACIFIC has ordered 25,000 tons of rails from the United States Steel Corporation.

THE CHICAGO & ALTON is reported to have ordered 8,000 tons of rails from the Illinois Steel Company.

THE CLEVELAND RAILWAY COMPANY has ordered 1,100 tons of open-hearth steel rails from the Algoma Steel Company.

THE LEHIGH VALLEY has ordered 1,500 tons of steel from the Lackawanna Steel Company for the new terminal at Buffalo.

THE BOSTON & MAINE has ordered 1,200 tons of steel from the American Bridge Company for a bridge near Greenfield, Mass.

THE RUSSIAN GOVERNMENT is reported to have ordered 12,000 tons of rails from the United States Steel Corporation, supposedly for use on the Chinese Eastern.

THE PENNSYLVANIA RAILROAD has ordered 1,850 tons of bridge material, 1,100 tons from the McClintic-Marshall Company, and 750 tons from the Fort Pitt Bridge Works.

THE DALLAS UNION TERMINAL COMPANY has ordered 181 tons of steel for one 152-ft. highway span at Commerce street, Dallas, Tex., from the American Bridge Company.

THE NEW YORK CENTRAL has ordered 15,500 tons of rails from the Illinois Steel Company. Of this order 5,500 tons will be for the Michigan Central, 8,500 tons for the Cleveland, Cincinnati, Chicago & St. Louis and 1,500 tons for the Cincinnati Northern.

THE NEW YORK PUBLIC SERVICE COMMISSION, First district, will receive bids until June 11, for 2,500 tons of rails and corresponding quantities of ties, spikes and other track equipment materials for use on the New Utrecht avenue elevated railroad in Brooklyn, a branch of the Fourth avenue subway.

THE BERLIN SURFACE RAILWAYS.—The effect of the European war was not felt on the Berlin surface railways until the autumn of 1914, but the annual report of the Grosse Berliner Strassenbahn for last year shows that losses in traffic on account of the war and of additional rapid transit and omnibus competition led to a reduction in dividends from 8 per cent in 1913 to 6 per cent in 1914. During mobilization there was a feverish increase in travel, but in August the loss as compared with 1913 was 13 per cent, and by December it had increased to 15 per cent. The mobilization of 15 per cent of the operating staff made it necessary to reduce service 25 per cent until the 5,000 employees could be replaced. Service on certain parallel lines was reduced or eliminated, while on the active lines trailers were increased, headways were lengthened and schedule speed was raised.

Supply Trade News

M. E. Duncan, vice-president of the Canadian Car & Foundry Company, and formerly of the American Car & Foundry Company, died in Montreal on May 23.

The Laconia Car Company, Laconia, New Hampshire, is working on a contract for shrapnel for the Russian government, sublet to it by the Canadian Car & Foundry Company.

George H. Russel, vice-president and founder of the Russel Wheel & Foundry Company, Detroit, Mich., of which he was president until 1906, died on May 17 at his home in Detroit, Mich.

F. C. Severin, formerly salesman for the Niles-Bement-Pond Company, Inc., at Birmingham, Ala., has been transferred to the New York office, and his territory will cover a portion of New York state.

The Industrial Works, Bay City, Mich., have established as their Pacific coast agents, N. B. Livermore & Co., of San Francisco and Los Angeles, Cal., and the Northwestern Equipment Company of Seattle, Wash., and Portland, Ore.

The United States Cast Iron Pipe & Foundry Company, Burlington, N. J., will open a new office in Kansas City, Mo., at 1404 R. A. Long building, about June 1. The new office will be in charge of R. C. Clifford, formerly of the St. Louis office of the company.

C. B. Yardley, Jr., at present eastern railroad representative of the William C. Robinson & Son Company, Baltimore, Md., with office at New York, will on June 1 become manager of the railway department of the



C. B. Yardley, Jr.

Lubricating Metal Company, 2 Rector street, New York. Mr. Yardley was for a time manager of the railway department of the United States Metal Products Company, and previous to that was for several years railroad representative of Jenkins Brothers, New York. Mr. Yardley is a prominent member of the Railway Supply Manufacturers' Association. In 1912-1913 he served as chairman of the enrollment committee of that organization, and at present is chairman of its badge committee. He has also served as secretary and treasurer of the Rail-

way Materials Association which is associated with the Railway Storekeepers' Association, and in May, 1914, was elected president of that organization.

The operation of the plant of the Continental Car & Equipment Company at Highland Park, Louisville, Ky., which was shut down when the company went into bankruptcy, will be resumed by the Continental Car Company, which has been incorporated with \$40,000 capital stock by A. H. McKinley and others.

The Hyman-Michaels Company has established a well equipped plant in the St. Louis district for the manufacture of scrap iron, having installed a number of shears, an acetylene cutting apparatus and a contrivance for sorting, cutting and testing materials. It has also installed a rail plant for handling new and relaying rails.

Bruce V. Crandall, who has been secretary of the National Railway Appliances Association since July 1, 1911, has resigned, effective on May 31. At a meeting of the board of directors on May 21, C. W. Kelly, of the Kelly-Derby Com-

pany, Chicago, treasurer and director of exhibits of the association, was elected secretary for Mr. Crandall's unexpired term.

The plan of reorganization for the Barney & Smith Car Company, announced May 24, contemplates the organization of a new company under the laws of Ohio with a capitalization as follows: First mortgage five per cent bonds \$2,000,000; seven per cent cumulative preferred stock \$1,500,000 and common stock \$2,000,000; total \$5,500,000. The present capitalization has the same amount of bonds and common stock, but also includes \$2,500,000 of eight per cent cumulative preferred. The present preferred stock will be exchanged for new common in the ratio of four shares of new common for ten shares of old preferred. The present common stock will be exchanged for new common stock in the ratio of one of new common for ten shares of old common. Of the new preferred, \$1,250,000 will be offered to present preferred stockholders at par in proportion to their holdings, one share of new to two shares of old, such preferred to carry with it 40 per cent of new common. The remainder of the new preferred stock will be offered to present common shareholders at par in proportion to their holdings, one share of new preferred to eight shares of old common, such preferred to carry with it 40 per cent of new common. Non-dividend bearing scrip will be issued for fractional shares of preferred and common, exchangeable for shares when presented in amounts of one or more shares of the respective kinds of stock. The committee reserves the right to dispose stock not taken by present stockholders. The committee for the common stockholders will bid for the plant for the sole benefit of stockholders who deposit their stock and assent to this plan. Any money accruing, as the result of a sale to stockholders who enter into this agreement, will not be distributed in cash, but will be applied as a subscription to new preferred stock.

Westinghouse Electric & Manufacturing Company

The Westinghouse Electric & Manufacturing Company and its subsidiary companies in the United States in the fiscal year ended March 31, 1915, had gross earnings of \$33,671,485 as compared with \$43,733,646 in 1914. Its cost of sales was \$31,109,073, so that the net manufacturing profits were \$2,562,412. There was also other income of \$1,158,527, leaving a gross income from all sources of \$3,720,939, as compared with \$5,998,078 in 1914. The net income applicable to interest and other charges was \$3,278,662. The interest charges totaled \$1,268,918, a considerable reduction from the \$1,706,005 of 1914, and the net income available for dividends and other purposes was \$2,009,744, as against \$4,058,809 in the previous year.

The value of unfilled orders on March 31, 1915, was \$8,951,410, as compared with \$7,951,785 on March 31, 1914. The average number of employees during the year was 15,145, as compared with 18,635 during the previous year.

During the year the company exchanged 85 per cent of the issued capital stock of the Westinghouse Machine Company for the common stock of the Westinghouse Electric & Manufacturing Company on the basis of one share of the latter for three shares of the Machine Company. In the same period the capital stock of the Societe Anonyme Westinghouse (the French company) was sold to the British Westinghouse Electric & Manufacturing Company, Ltd., and payment was received in other securities. The British company now owns the controlling interest in the French company, and through the latter the controlling interest in the Italian company.

On March 31, 1915, the company had total current assets of \$18,626,776, of which \$8,855,280 was cash and \$6,657,731 was accounts receivable. The current liabilities on the same date were \$3,704,102, including \$2,270,038 accounts payable. The company's liabilities also include \$2,720,000 of collateral notes, \$4,500,000 of such notes having been retired on maturity in the course of the year. The company's surplus at the close of the fiscal year was \$7,473,412.

CANAL EXTENSION IN BOMBAY.—The Marquess of Crewe has sanctioned the Gokak canal extension in Bombay as a protective irrigation work.

RAILWAY RATES IN SPAIN.—A syndicate of Spanish railway bondholders and bankers is working to prevent proposed reductions in freight rates.

Railway Construction

ATCHISON, TOPEKA & SANTA FE.—This company has purchased the Oil Belt Terminal Railway from Jennings to Oilton, Okla., and the Cushing Traction Company from Cushing to Pemeta. It will build a line connecting Pemeta and Oilton, and also a branch from Pemeta to Drumright. When it is completed it will give the Santa Fe a direct line from Jennings to Cushing. The grading contract has been awarded to Michael Dougherty, Guthrie, Okla. The track will be laid by company forces.

BROOKLYN MARGINAL RAILROAD.—See an item in General News in regard to this proposed line along the east shore of New York bay in the borough of Brooklyn, New York City.

CHICAGO, BURLINGTON & QUINCY.—Work is now under way on the short section between Wendover, Wyo., and Guernsey, to connect the C. B. & Q. line from the junction with the Northern Pacific near Billings with the company's Nebraska lines. (January 29, p. 211.)

INTERCOLONIAL.—Residents of Guysborough and Antigonishe counties, Nova Scotia, are asking for the construction of an extension of the Intercolonial from Sunnybrae east to Eden Lake, thence southeast to Country Harbour and northeast following the valley of the Salmon river to Guysborough, thence around the head of Chedabucto bay and following the shore of the Strait of Canso to Port Mulgrave, where the line will again connect with the Intercolonial.

MUSGRAVES-MERRILL SHIPMENT COMPANY.—This company proposes to construct a railroad from Fort Davis, Tex., to Marfa, 18 miles. We are advised that contracts will be awarded as soon as the company obtains the deed to the right of way. B. Q. Musgraves, Fort Davis, Tex., is president, and H. A. Hardaway, Deming, N. M., is chief engineer.

NEW YORK CONNECTING.—Bids are wanted until June 7, by A. C. Shand, chief engineer, Southern division, Broad street station, Philadelphia, Pa., for the construction of the grading and masonry of a portion of Section 2, of the New York Connecting Railroad, extending from a point near Bowery Bay road to the south side of Fremont street, in the borough of Queens, New York, about 4.21 miles.

NEVADA SHORT LINE.—This company has just started construction on a 12 to 14 mile extension from Nenzel station on the Southern Pacific to the gold and silver mines at Rochester, Nev. The contract for grading and track laying has been awarded to Ottoman & Duprey, San Francisco, Cal. There will be five timber bridges, about 460 ft. in all, and will be built by the railway company. Depots and sheds will also be built.

NEW YORK SUBWAYS.—Bids for the construction of Section No. 2, of the Gravesend avenue elevated railroad were opened recently by the New York Public Service Commission, First district, and the contract probably will be awarded soon. This section extends from Bay Parkway to avenue X. The Oscar Daniels Co., was the lowest bidder, and offered to do the work for \$863,775.

The commission is having plans made for the construction of the Utica avenue subway, in the borough of Brooklyn. This will be a branch of the Eastern Parkway subway, and is to be constructed from Eastern parkway down Utica avenue to Flatbush avenue.

A new route for an elevated line to be built through Westchester avenue, to connect the Bronx Park branch of the existing subway at Simpson street with the proposed Pelham Bay Park branch of the Lexington avenue subway, in the borough of the Bronx, has been adopted by the commission.

SAVANNAH, PIEDMONT & WESTERN.—This company, which was incorporated recently in South Carolina has preliminary surveys made and the right of way secured, it is said, for the line to be built from a point on the Savannah river at or near North Augusta in Schultz township, Aiken county, north to a point in Saluda county, thence northwest to Greenwood, about 60 miles.

J. Peyton Clark, New York; S. H. McGhee and K. Baker, Greenwood, S. C., are incorporators. (April 2, p. 768.)

TUCSON, CORNELIA & GILA BEND.—Bids are being asked for until June 10, to build a railway from Gila Bend, Ariz., south to Ajo, about 42 miles. The company expects to develop a traffic in oil, sulphuric acid, ore, concentrates and copper. L. D. Ricketts, president, Warren, Ariz., and R. H. Jones, chief engineer of construction, Gila Bend.

WISCONSIN & NORTHERN.—This company will extend its line from a point just north of Van Ostrand, Wis., north to Crandon, a distance of 29 miles. The contract for grading and timber culverts has been awarded to Peter Nelson & Co., Minneapolis, Minn. The track will be laid by company forces. The Wisconsin Bridge & Iron Company, Milwaukee, Wis., has been awarded the contract for a 307-ft. steel bridge over the Wolf river, just north of Van Ostrand.

RAILWAY STRUCTURES

ALGIERS, LA.—Morgan's Louisiana & Texas Railroad & Steamship Company will construct new shop buildings and probably install some new tools and equipment at this place. The tools and equipment have not yet been definitely determined.

ANDERSON, S. C.—The Piedmont & Northern has given a contract to the Fiske-Carter Construction Company, Greenville, S. C., to rebuild the freight house at Anderson which was damaged by fire.

BESSEMER, ALA.—The Railroad Commission of Alabama has directed the Louisville & Nashville to build a new brick and stone station in Bessemer, it is said, to cost about \$30,000, and the Alabama Great Southern to build a station to cost \$25,000.

KINNICKINNICK, WIS.—The Chicago & North Western contemplates building a 1,000,000-bu., reinforced concrete grain elevator at this point.

MONTEZUMA, IND.—The Cincinnati, Hamilton & Dayton has asked for bids on a bridge to be built over the Wabash river at this place. It will be a 150-ft. open floor through riveted truss steel span designed for Cooper's E-50 loading. There will be one pier and one masonry abutment.

SIDNEY, OHIO.—The Cincinnati, Hamilton & Dayton has asked for bids on a bridge to be built over Fair avenue at Sidney. It will be a 79-ft. deck plate girder span designed for Cooper's E-50 loading. It will have two masonry abutments.

TRENTON, N. J.—An officer of the Pennsylvania Railroad writes regarding the report that the company will build a new bridge over the Delaware & Raritan canal at Trenton, that the company has submitted a tentative plan to the city for the construction of a structure similar to the bridges already built over the canal. No conclusion has yet been reached as to the location or design of the bridge.

The Pennsylvania Railroad has given a contract to the American Dredging Company for dredging the channel of the Delaware river to a depth of 12 ft. for about three-quarters of a mile, in connection with the new bridge at Trenton. This will involve the dredging of about 92,000 cu. yd. of material.

TROY, OHIO.—The Cincinnati, Hamilton & Dayton has asked for bids on a bridge to be built over a highway, the Miami & Erie canal and the Hydraulic canal, consisting of one 30-foot I-beam span, one through plate girder span 79 ft. long, one deck plate girder span 38 ft. long, two deck plate girder spans 51 ft. long and one deck plate girder span 45 ft. long. It will also have five piers and two masonry abutments.

VAN OSTRAND, WIS.—See Wisconsin & Northern under Railway Construction.

WALLA WALLA, WASH.—The Oregon-Washington Railroad & Navigation Company will build a one-story, 10-stall roundhouse at this place. It will have brick walls, mill interior and concrete pits. The approximate cost will be about \$25,000. Moore Brothers, Portland, Ore., have been awarded the contract and have just started the work.

WILKINSBURG, PA.—The Pennsylvania Railroad has given a contract to Irwin & Leighton, Philadelphia, for building a new station at Wilkesburg.

Railway Financial News

BOSTON & MAINE.—The bill before the Massachusetts legislature providing for the reorganization of this company has been passed in the House by a large majority and is now believed to be in such shape that its final passage by both houses is assured. On the last day of debate the status of the Hampden railroad was discussed at length, but the law was finally so shaped as to allow the absorption of this road by the B. & M. provided the consent of the Public Service Commission shall be secured; which, however, must not be given until after notice and a public hearing; and the commission must find that the proposed acquirement of the Hampden will be in the interest of the public, will be just and equitable as between the two contracting corporations and is to be made for a consideration not exceeding the reasonable and proper cost incurred in the construction of the Hampden Railroad as determined by the Public Service Commission in its report made December 24, 1913.

The law provides that the new company must earn as well as pay 5 per cent dividends before its securities can be accepted as proper investments for savings banks.

CHESAPEAKE & OHIO.—The directors, at their meeting on May 21, took no action in the question of a dividend, the announcement being made at the close of the meeting that a decision would be made at the regular meeting on June 17.

INTERNATIONAL & GREAT NORTHERN.—Judge Burns in the United States district court at Houston, Tex., May 17, handed down a decree ordering the sale of this road, at Houston on some day subsequent to August 1 next. The Master to conduct the sale is yet to be named.

MISSOURI PACIFIC.—The executors of the Gould estate, holding \$6,000,000 of the three-year six per cent notes of this company, have agreed to an extension of the notes for one year. It is said that all holders of these notes receive in return for this concession a cash payment of \$5 on each one thousand dollar note. It is said that the holders of a large majority of all of the notes—\$25,000,000—have agreed to the extension of time.

NEW YORK NEW HAVEN & HARTFORD.—Judge William H. Hunt in the United States District Court at New York City has set October 25 as the day for the trial of twelve directors and former directors of the New Haven road in the long pending suit of the government charging conspiracy, in violation of the anti-trust law, in the consolidation and purchase of certain railroads, and other acts done by the board of directors in past years. The defendants are: Lewis Cass Ledyard, Charles F. Brooker, D. Newton Barney, Robert W. Taft, James S. Hemingway, Charles M. Pratt, A. Heaton Robertson, Frederick F. Brewster, Henry K. McHarg, Edward D. Robbins, Alexander Cochrane and John L. Billard. Immunity was granted recently by Judge Hunt to William Skinner and James S. Elton, but the government is appealing from Judge Hunt's decision in this regard. Judge Hunt also granted a separate collective trial to William Rockefeller, George F. Baker, T. De Witt Cuyler, Theodore N. Vail, Edward Milligan and Francis T. Maxwell.

PERE MARQUETTE.—At Detroit, May 24, Judge Tuttle fixed October 1 as the date for the sale of the road, unless some satisfactory reorganization plan is submitted at once. He intimated in reply to the objection of consolidated bondholders that they would have a chance at the hearing on the petition to submit a plan for reorganization as the only alternative. The formal conditions of the sale will be announced June 7 and the receivers will file a petition asking for the disposal of the property for the purpose of paying its debts. Claims against the system which have been recorded in court actions and at various investigations amount to more than \$88,000,000. Underlying bondholders, in their petition asking for the sale of the road, guaranteed to bid a sufficient amount of money to clear away the equipment indebtedness as well as their own claims.